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**CATALOG OF HIGH RESOLUTION INFRARED SPECTRA:  
FIELD-WIDENED INTERFEROMETER PAYLOAD: SERGEANT A30.276 - LAUNCHED  
13 APRIL 1983**

by

**R.H. Haycock, V.A. Thurgood, A.J. Steed, and C.R. Harris**

**Space Dynamics Laboratories  
Utah State University UMC-41  
Logan, Utah 84322**

**26 June 1985**

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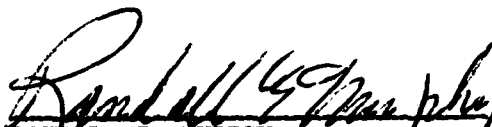
**Prepared for:**

**Air Force Geophysics Laboratory  
Air Force Systems Command  
United States Air Force  
Hanscom AFB, Massachusetts 01731**

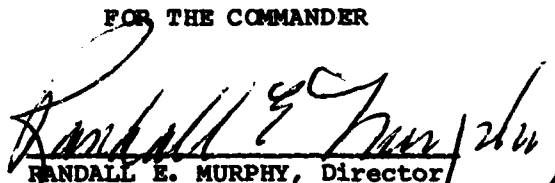
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"This technical report has been reviewed and is approved for publication"

  
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Infrared Technology Division

FOR THE COMMANDER

  
RANDALL E. MURPHY, Director  
Infrared Technology Division

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19. ABSTRACT (Continue on reverse if necessary and identify by block number) A Sergeant Rocket (A30.276), instrumented with a cryogenically-cooled, Michelson IR Interferometer was launched 13 April 1983 from the Poker Flat, Alaska Research Range. The purpose of the flight was to measure IR emission spectra in the 2 - 7.5 $\mu$ m region. The flight was extremely successful and provided first resolved spectra of carbon monoxide (CO) near 4.7 $\mu$ m and of ionized nitric oxide (NO <sup>+</sup> ) near 4.3 $\mu$ m. Further, the data from this flight provided the first high resolution spectra of atmospheric emitters as a function of altitude. These data include hydroxyl (OH) near 2.8 $\mu$ m, carbon dioxide (CO <sub>2</sub> ) near 4.3 $\mu$ m, and nitric oxide (NO) near 5.4 $\mu$ m.			
This report catalogs the spectra obtained during the flight and presents it with high resolution.			
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# RELATED CONTRACTS AND PUBLICATIONS

F19628-81-C-0140  
F19628-77-C-0203  
F19628-76-C-0261

Haycock, R.H., V.A. Thurgood, A.J. Steed, and C.R. Harris,  
Catalog of Low Resolution Infrared Spectra: Sergeant A30.276-  
launched 13 April 1983, Scientific Report No. 11, AFGL-TR-85-  
0162, Contract No. F19628-83-C-0056, 300 pp., Space Dynamics  
Laboratories, Utah State University, Logan, June 1985.  
ADA181164

Ulwick, J.C., G.D. Allred, K.D. Baker, and L.C. Howlett,  
Rocketborne and Ground Based Measurements In Support of the  
Field-Widened Interferometer Experiment Sergeant A30.276,  
Scientific Report No. 7, AFGL-TR-85-0115, Contract No.  
F19628-83-C-0056, 107 pp., Space Dynamics Laboratories, Utah  
State University, Logan, May 1985. ADA189105

Burt, D.A., and G.D. Allred, Rocketborne ionospheric studies:  
1976-1979, Final Report, AFGL-TR-79-0179, Contract No.  
F19628-76-C-0216, 148 pp., Space Measurements Laboratory,  
Utah State University, Logan, 6 August 1979.  
ADA078799

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Interferometer Spectra - Intensity (watts/cm-ster) vs. Wavenumber (cm<sup>-1</sup>)

File No. <sup>†</sup>	Appr. Elapsed time (sec)	Alt. Range (km)	Page
* 1	80.2	85.6- 87.2	5
* 2	81.9	87.2- 88.8	7
* 3	83.5	88.8- 90.4	9
* 4	85.2	90.4- 91.9	11
* 5	86.8	91.9- 93.5	13
* 6	88.4	93.5- 95.0	15
* 7	90.1	95.0- 96.4	17
* 8	91.7	96.4- 97.9	19
* 9	93.3	97.9- 99.3	22
* 10	95.0	99.3-100.7	23
* 11	96.6	100.7-102.1	25
* 12	98.2	102.1-103.4	27
* 13	99.8	103.4-104.8	29
* 14	101.5	104.8-106.1	31
* 15	103.1	106.1-107.3	33
** 16	104.7	107.3-108.6	35
* 17	106.4	108.6-109.8	37
18	108.0	109.8-111.0	39
19	109.6	111.0-112.2	41
20	111.3	112.2-113.4	43
21	112.9	113.4-114.5	45
22	114.5	114.5-115.6	47
* 23	116.1	115.6-116.6	49
24	117.8	116.7-117.7	51
25	119.4	117.7-118.7	53
* 26	121.0	118.7-119.7	55
* 27	122.7	119.7-120.7	57
28	124.3	120.7-121.7	59
29	126.0	121.7-122.6	61
30	127.5	122.6-123.5	63
31	129.2	123.5-124.4	65
32	130.8	124.4-125.2	67
33	132.4	125.2-126.0	69
34	134.1	126.0-126.8	71
35	135.7	126.8-127.6	73
36	137.3	127.6-128.4	75
37	139.0	128.4-129.1	77
** 38	140.6	129.1-129.8	79

# LIST OF ILLUSTRATIONS

Interferometer Spectra - Intensity (watts/cm-ster) vs. Wavenumber (cm<sup>-1</sup>)

<u>File No.<sup>†</sup></u>	<u>Appr. Elapsed time (sec)</u>	<u>Alt. Range (km)</u>	<u>Page</u>
39	142.2	129.8-130.5	81
** 40	144.0	130.5-131.1	83
41	145.5	131.1-131.7	85
42	147.1	131.8-132.4	87
43	148.7	132.4-132.9	89
44	150.4	132.9-133.5	91
45	152.0	133.5-134.0	93
** 46	153.6	134.0-134.5	95
** 47	155.3	134.5-135.0	97
48	155.9	135.0-135.4	99
49	158.5	135.4-135.9	101
50	160.1	135.9-136.3	103
51	161.8	136.3-136.6	105
52	163.6	136.7-137.0	107
53	165.0	137.0-137.3	109
54	166.6	137.3-137.6	111
55	168.3	137.6-137.9	113
56	169.9	137.9-138.1	115
** 57	171.5	138.1-138.4	117
58	173.1	138.4-138.6	119
59	174.8	138.6-138.8	121
60	176.4	138.8-138.9	123
61	178.0	138.9-139.0	125
62	179.6	139.0-139.1	127
63	181.3	139.1-139.2	129
64	182.9	139.2-139.3	131
65	184.5	139.3-139.3	133
66	186.2	139.3-139.3	135
67	187.8	139.3-139.3	137
68	189.5	139.3-139.2	139
69	191.1	139.25-139.1	141
70	192.7	139.1-139.0	143
71	194.4	139.0-138.9	145
72	196.0	138.9-138.8	147
73	197.7	138.8-138.6	149
74	199.3	138.6-138.4	151
** 75	200.9	138.4-138.2	153
76	202.6	138.2-137.9	155

# LIST OF ILLUSTRATIONS

Interferometer Spectra - Intensity (watts/cm-ster) vs. Wavenumber ( $\text{cm}^{-1}$ )

File No. <sup>†</sup>	Appr. Elapsed time (sec)	Alt. Range (km)	Page
77	204.2	137.9-137.7	157
** 78	205.8	137.7-137.3	159
79	207.5	137.3-137.0	161
80	209.1	137.0-136.7	163
* 81	210.8	136.7-136.3	165
82	212.4	136.3-135.9	167
83	214.0	135.9-135.5	169
84	215.6	135.5-135.0	171
85	217.3	135.0-134.6	173
86	218.9	134.6-134.1	175
87	220.5	134.1-133.5	177
88	222.2	133.5-133.0	179
89	223.8	133.0-132.4	181
90	225.4	132.4-131.8	183
91	227.0	131.8-131.2	185
92	228.7	131.2-130.5	187
93	230.3	130.5-129.9	189
94	232.0	129.9-129.2	191
95	233.6	129.2-128.4	193
96	235.2	128.4-127.7	195
97	236.9	127.7-126.9	197
98	238.5	126.9-126.1	199
99	240.1	126.1-125.3	201
100	241.8	125.3-124.4	203
101	243.4	124.4-123.6	205
102	245.0	123.5-122.6	207
103	246.6	122.6-121.7	209
104	248.3	121.7-120.8	211
105	250.0	120.8-119.8	213
106	251.5	119.8-118.8	215
107	253.2	118.8-117.8	217
108	254.8	117.8-116.7	219
109	256.4	116.7-115.7	221
110	258.1	115.6-114.5	223
111	259.7	114.5-113.4	225
112	261.4	113.4-112.2	227
113	263.0	112.2-111.1	229
**114	264.6	111.1-109.9	231
*115	266.3	109.9-108.6	233



# LIST OF ILLUSTRATIONS

Interferometer Spectra - Intensity (watts/cm-ster) vs. Wavenumber (cm<sup>-1</sup>)

<u>File No.<sup>†</sup></u>	<u>Appr. Elapsed time (sec)</u>	<u>Alt. Range (km)</u>	<u>Page</u>
*116	267.9	108.6-107.4	235
**117	269.5	107.4-106.1	237
118	271.1	106.1-104.8	239
119	272.8	104.8-103.5	241
120	274.4	103.5-102.1	243
121	276.0	102.1-100.8	245
122	277.6	100.8- 99.4	247
123	279.3	99.4- 98.0	249
124	280.9	98.0- 96.5	251
125	282.5	96.5- 95.2	253
126	284.1	95.0- 93.6	255
*127	285.8	93.5- 92.0	257
128	287.4	92.0- 90.5	259
129	289.0	90.5- 88.9	261
130	290.6	88.9- 87.3	263
**131	292.3	87.3- 85.7	265
132	293.9	85.7- 84.1	267
*133	295.5	84.1- 82.4	269
134	297.1	82.4- 80.7	271
135	298.8	80.7- 79.0	273
136	300.4	79.0- 77.2	275
137	302.0	77.2- 75.5	277
138	303.6	75.5- 73.7	279
139	305.3	73.7- 71.9	281
140	306.9	71.9- 70.0	283
141	308.5	70.0- 68.2	285
142	310.1	68.1- 66.2	287
143	311.8	66.2- 64.3	289
144	313.4	64.3- 62.4	291
145	315.6	62.4- 60.4	293
146	316.6	60.4- 58.4	295

\* Denotes high quality spectra.

\*\* Denotes spectra of lower quality.

† Data files not designated with \* or \*\* are poor quality.

## 1. INTRODUCTION

In recent years, the United States Air Force has supported several programs which have investigated the chemistry and physics of upper atmospheric energy dynamics. One such program is the Rocketborne Field-Widened Interferometer (RBFWI) experiment, in which Space Dynamics Laboratories (SDL) at Utah State University participated under Contract No. F19628-81-C-0056.

The RBFWI experiment included the flight of a Sergeant rocket (A30.276) which was launched on 13 April 1983 from Poker Flat Research Range, Alaska into an IBC Class II aurora. The purpose of the flight was to; measure emissions from the disturbed atmosphere with high spectral resolution and sensitivity to allow characterization of atmospheric emitters and excitation mechanisms. Specifically, researchers hoped to obtain vertical profiles, time histories, densities, and rotational/vibrational temperatures of certain atmospheric constituents. The prime instrument aboard the payload of A30.276 was a field-widened interferometer designed and fabricated by SDL and sponsored by the Defense Nuclear Agency (DNA) and the Air Force Geophysics Laboratory (AFGL).

The purpose of this scientific report is to catalog the data obtained by the interferometer during the flight of A30.276. It is one of two such catalogs which are in turn members of a series of scientific reports regarding the flight of A30.276 and its related instrumentation.

Other scientific reports prepared under Contract No. F19628-81-C0056 contain detailed information regarding the field-widened interferometer and other payload and ground based instrumentation used for the flight of A30.276.

Scientific Report No. 7 - AFGL-TR-85-0115 [Ulwick et al., 1985] discusses the support instruments aboard A30.276 (the atomic oxygen detector, energy deposition scintillator, and photometers) and data from the supporting ground based instruments.

Scientific Report No. 8 - AFGL-TR-85-0132 (ADA165-253) [Zachor et al., 1985] discusses linear least-squares and other data reduction techniques used to analyze spectral data obtained in the RBFWI experiment.

Scientific Report No. 11 - AFGL-TR-85-0162 (ADA181164) [Harris et al., 1985] also catalogs the data obtained during the flight of A30.276. In contrast to this report, Scientific Report No. 11 presents the spectra at a lower resolution.

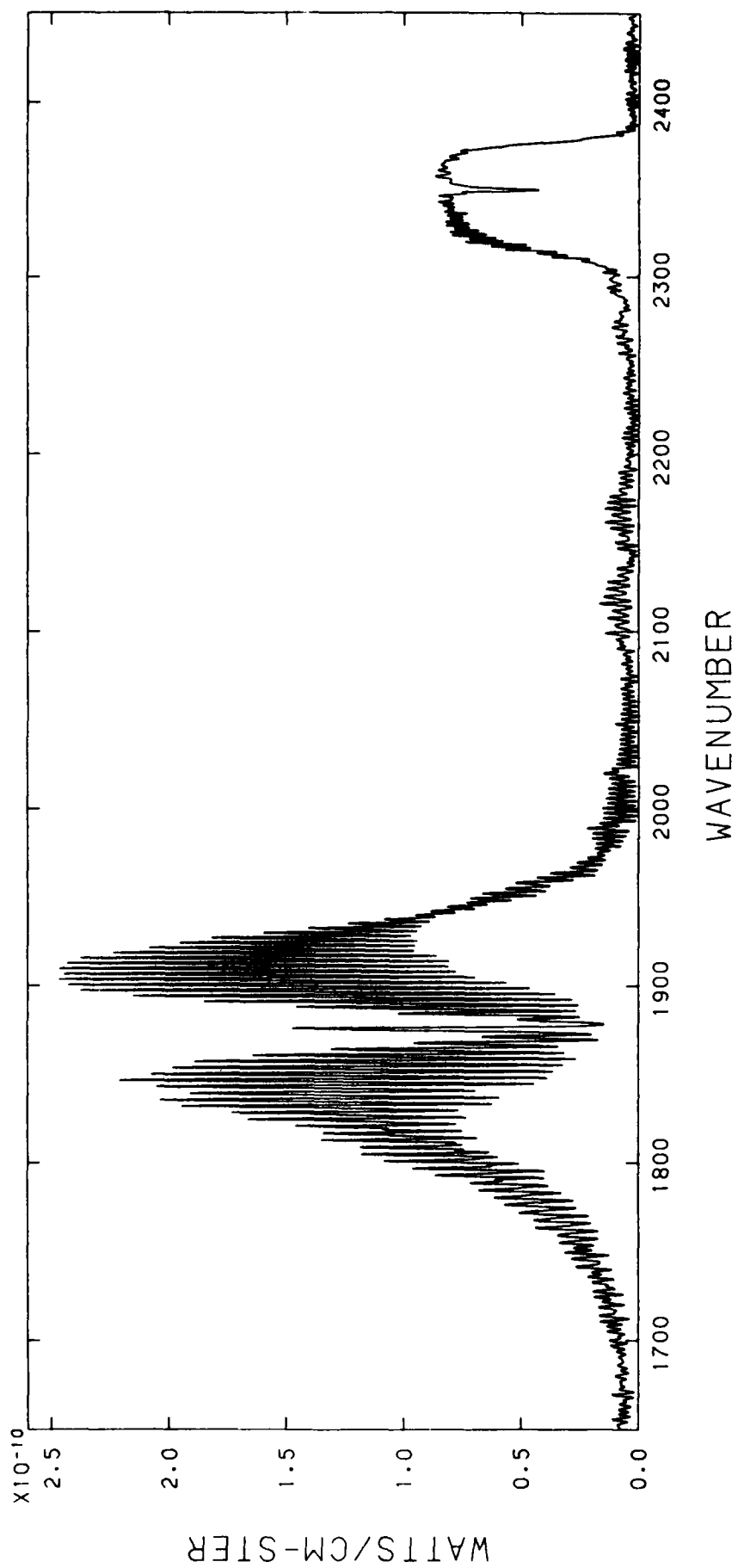
#### Data Overview

The data cataloged in this report represent the results of performing a 64,000-point Fourier transform on the raw data and then apodizing it using a Hamming function; which yielded a full width at half maximum resolution of  $1.63 \text{ cm}^{-1}$ . Each spectrum contained herein constitutes a data file and is composed of two graphs of intensity (watts/cm-ster) vs. wavenumber ( $\text{cm}^{-1}$ ). The second of the two graphs clarifies the lower intensities by exhibiting a factor of ten enhancement on the vertical scale. Each file also includes the data file number, altitude of the interferometer at the time of data acquisition, and the date and time the data was plotted.

Due to an instrument malfunction during flight, only the following data files are of high quality: 1-15, 17, 23, 26, 27, 81, 115, 116, 127, and 133. Files 16, 38, 40, 46, 47, 57, 75, 78, 114, 117, and 131 are of lower quality; the remaining files are of poor quality.

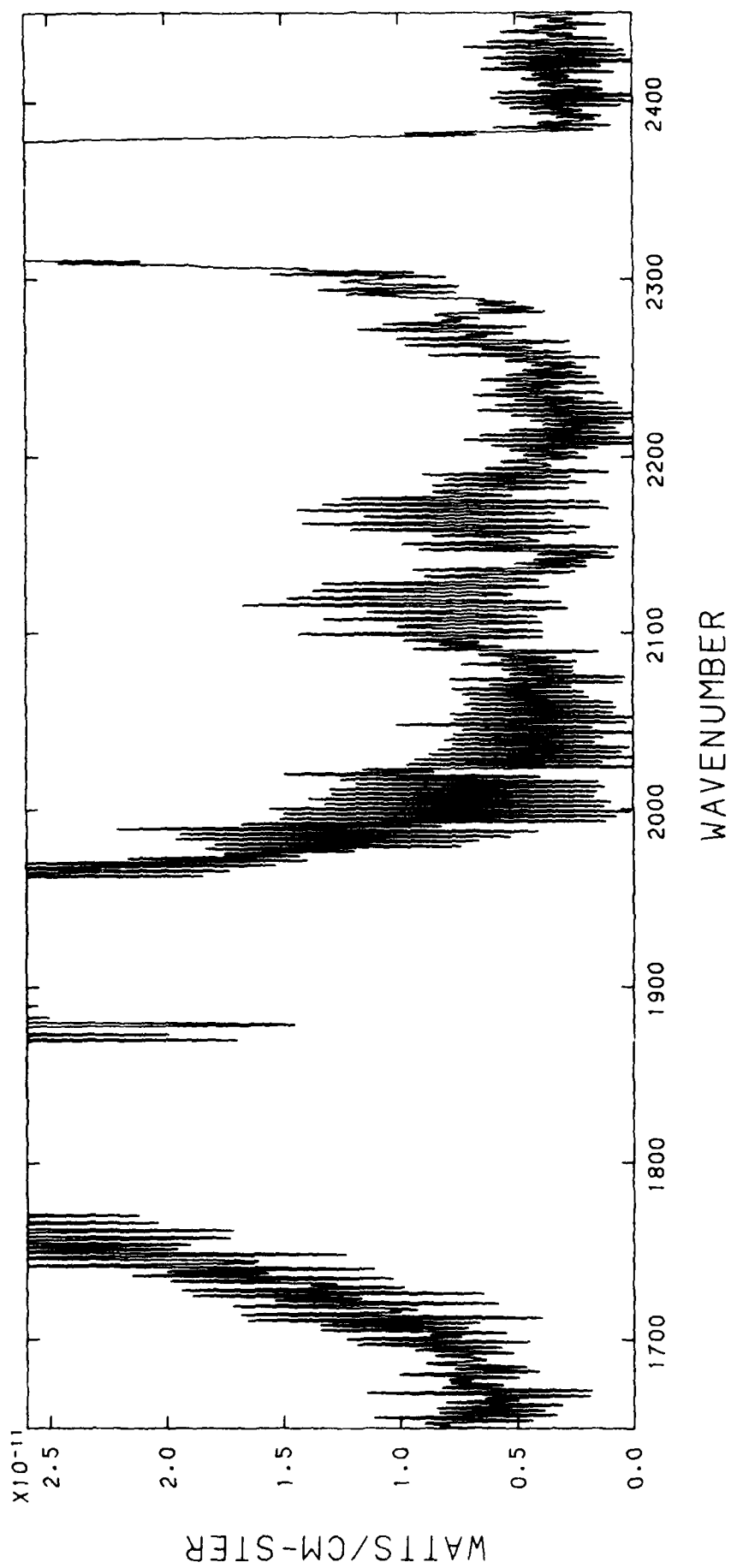
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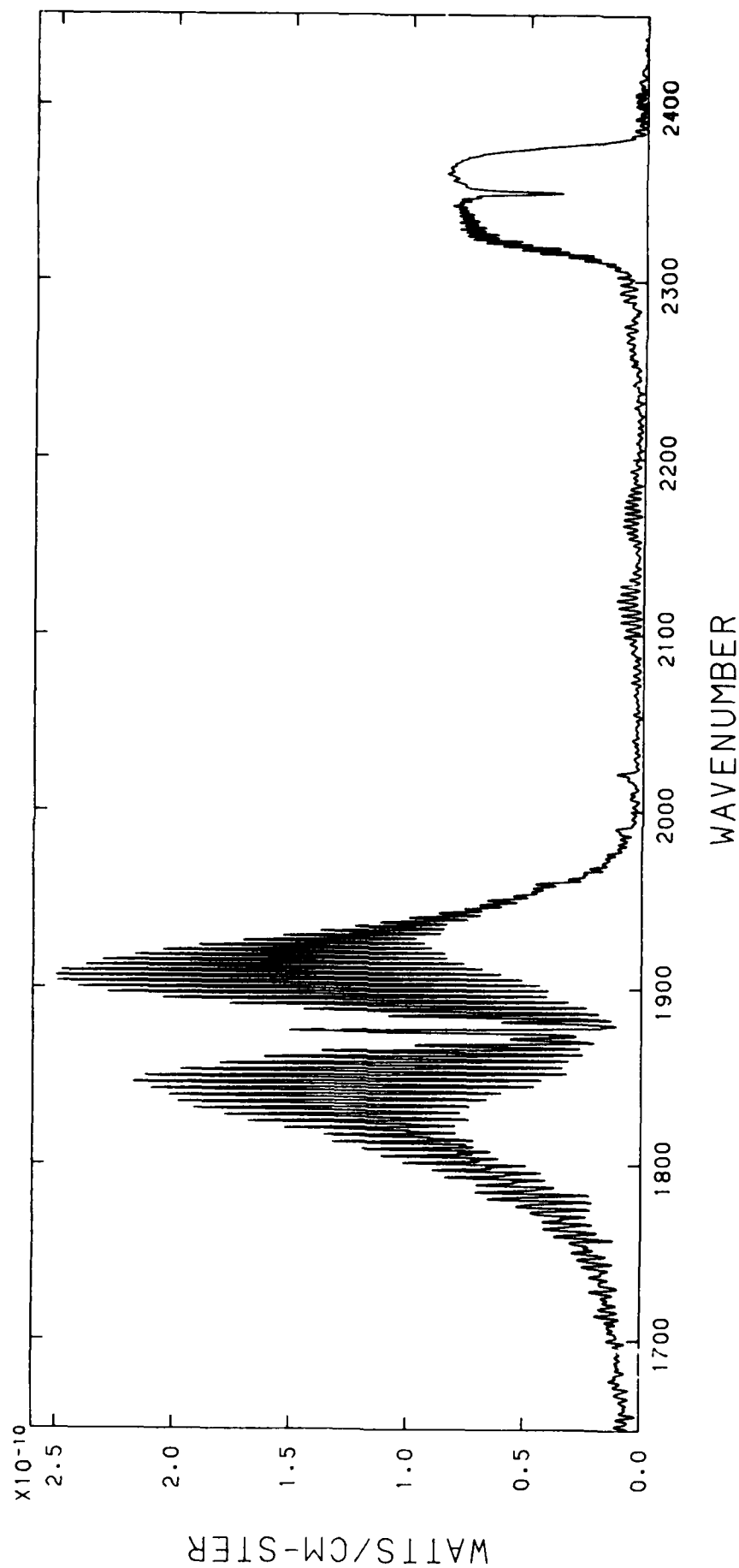
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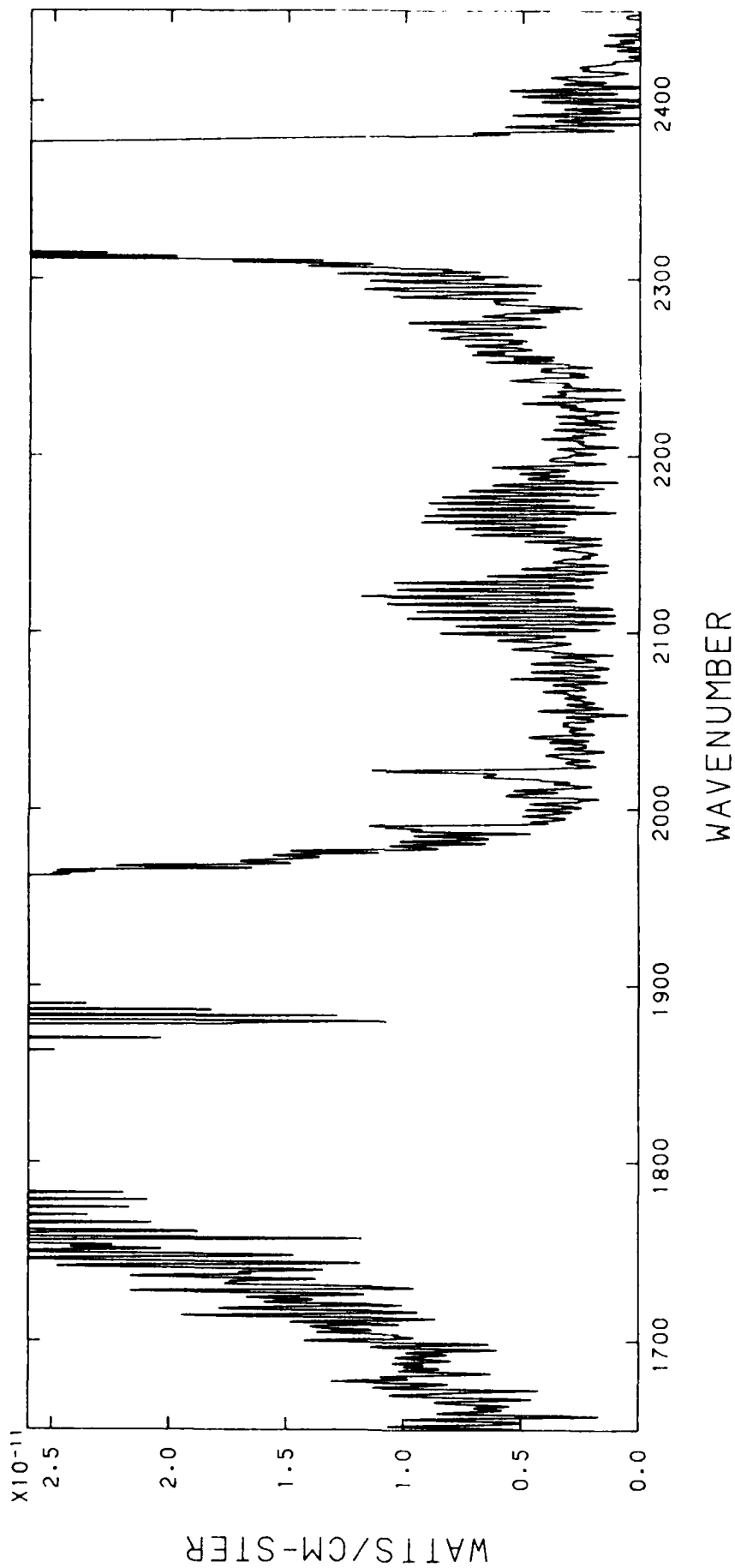
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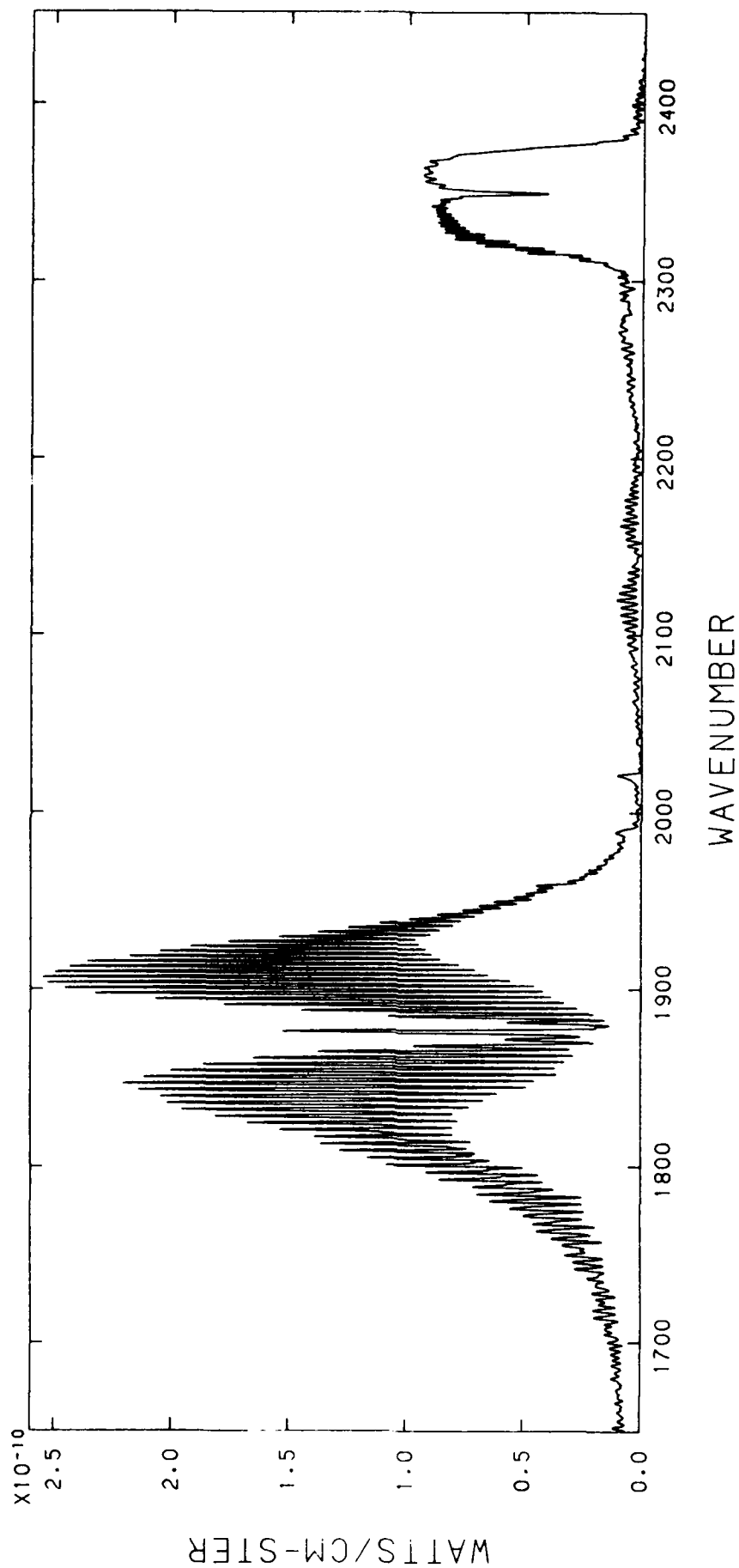
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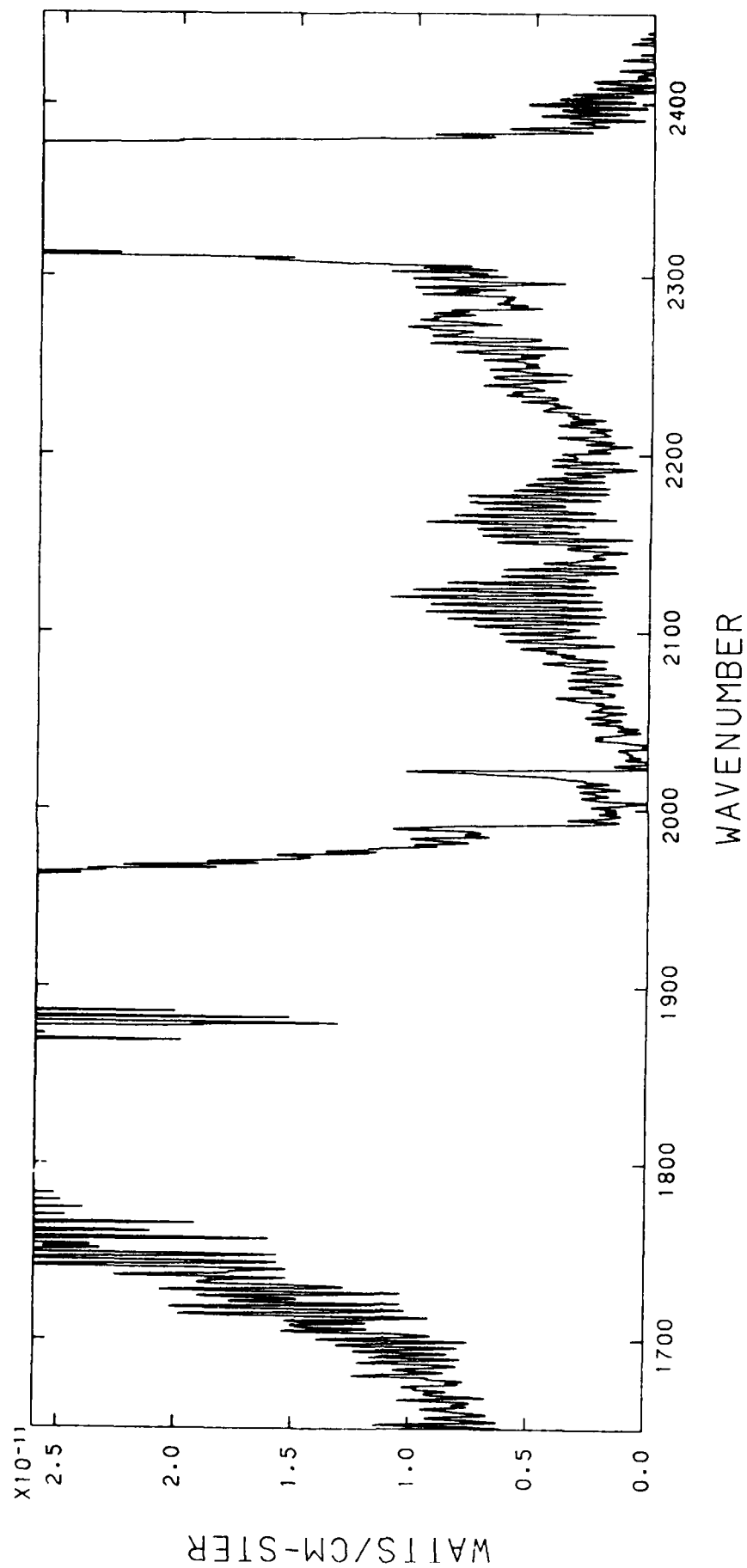
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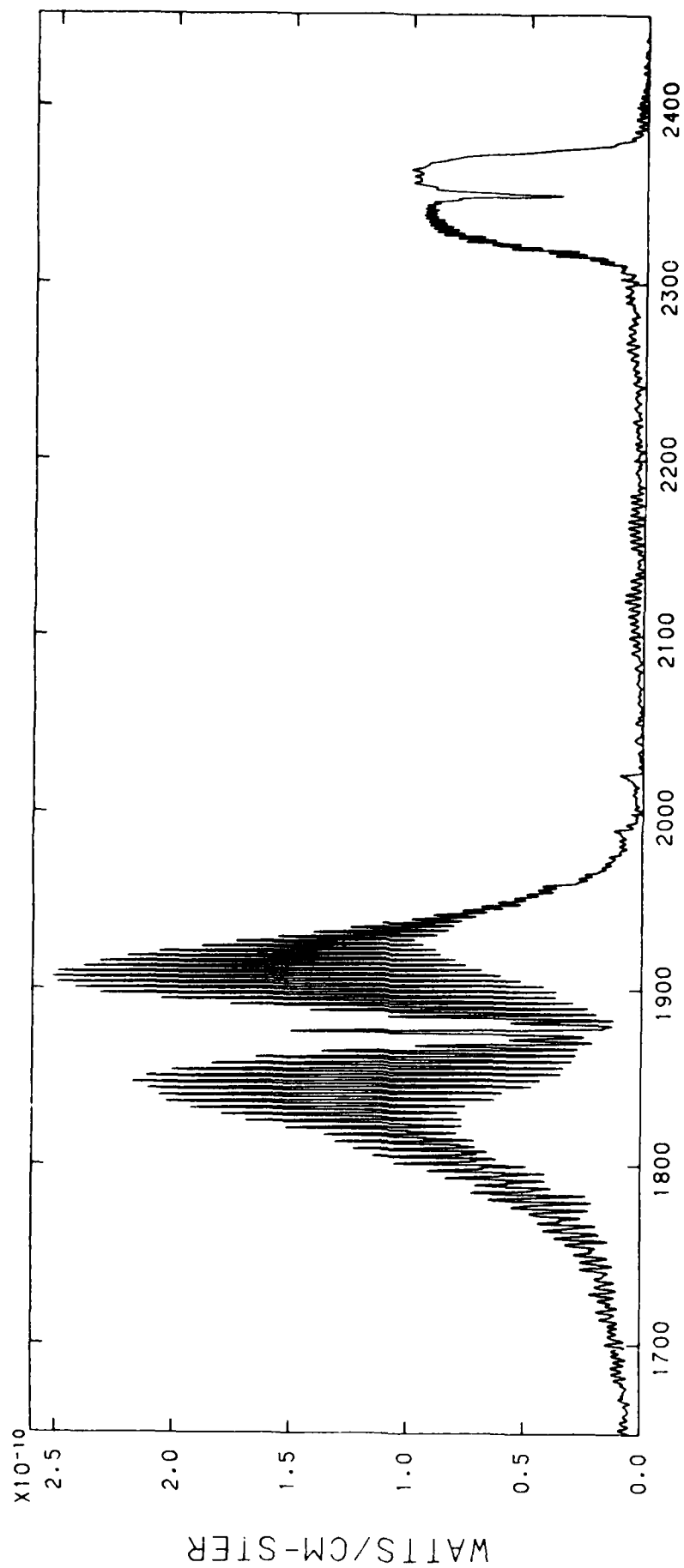
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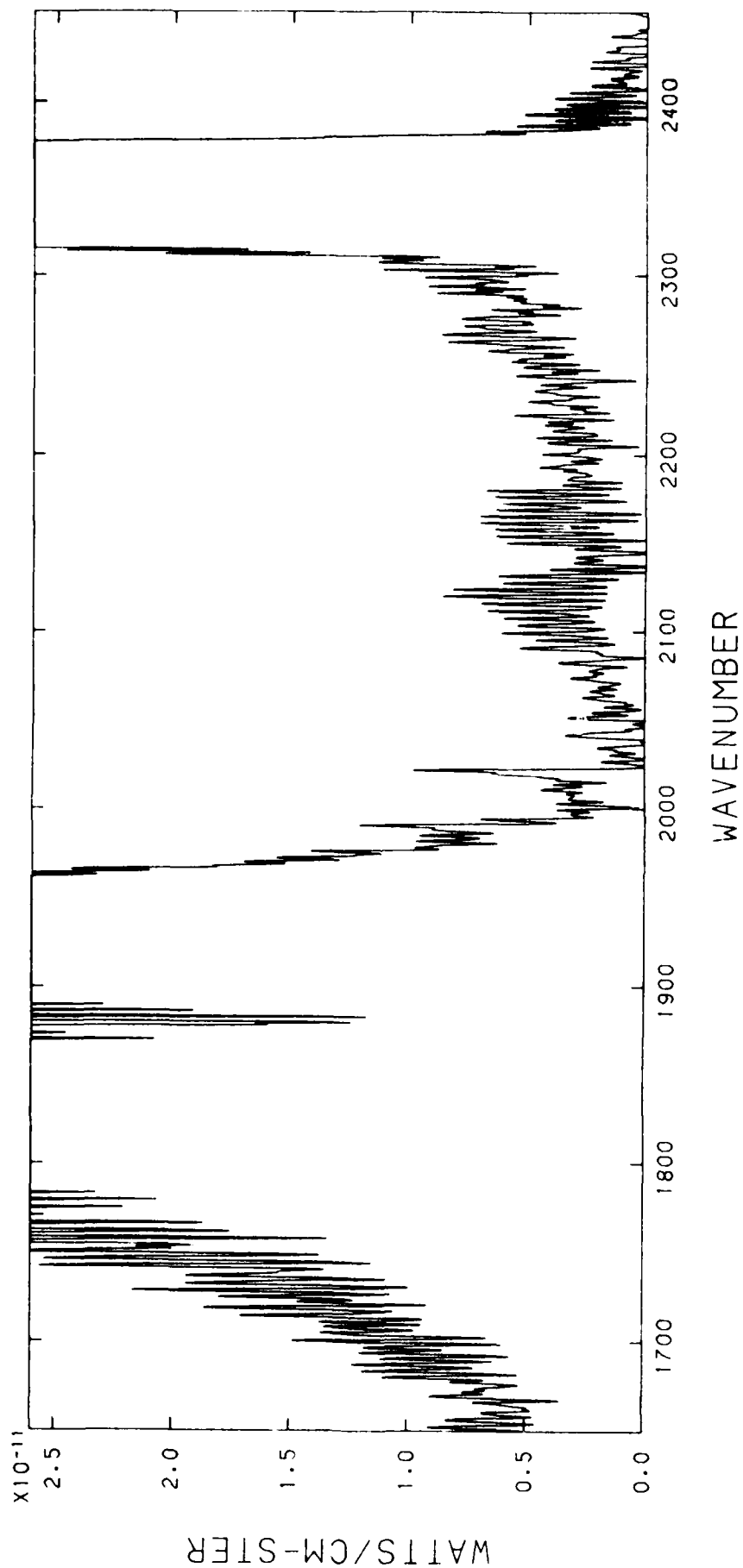
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WAVENUMBER

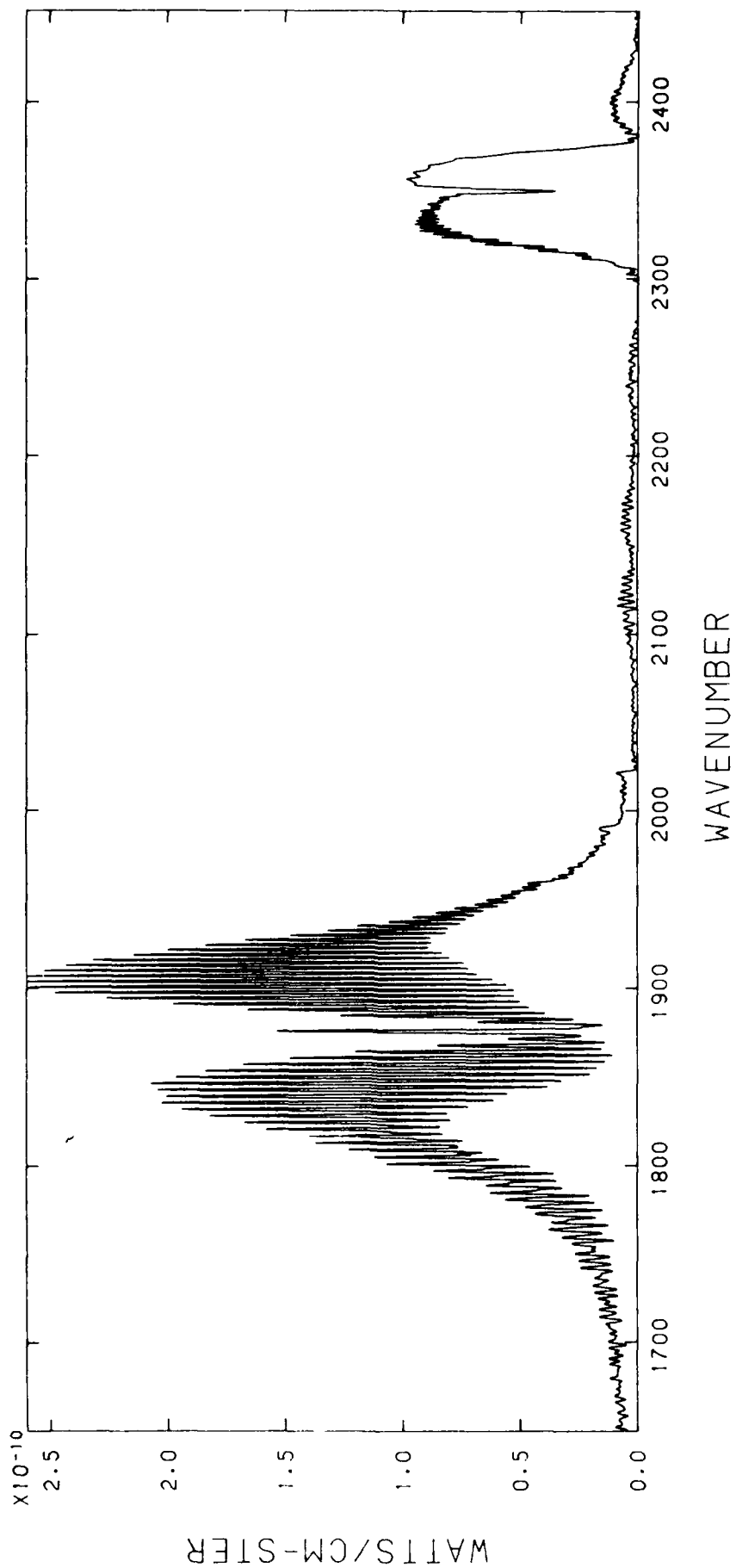
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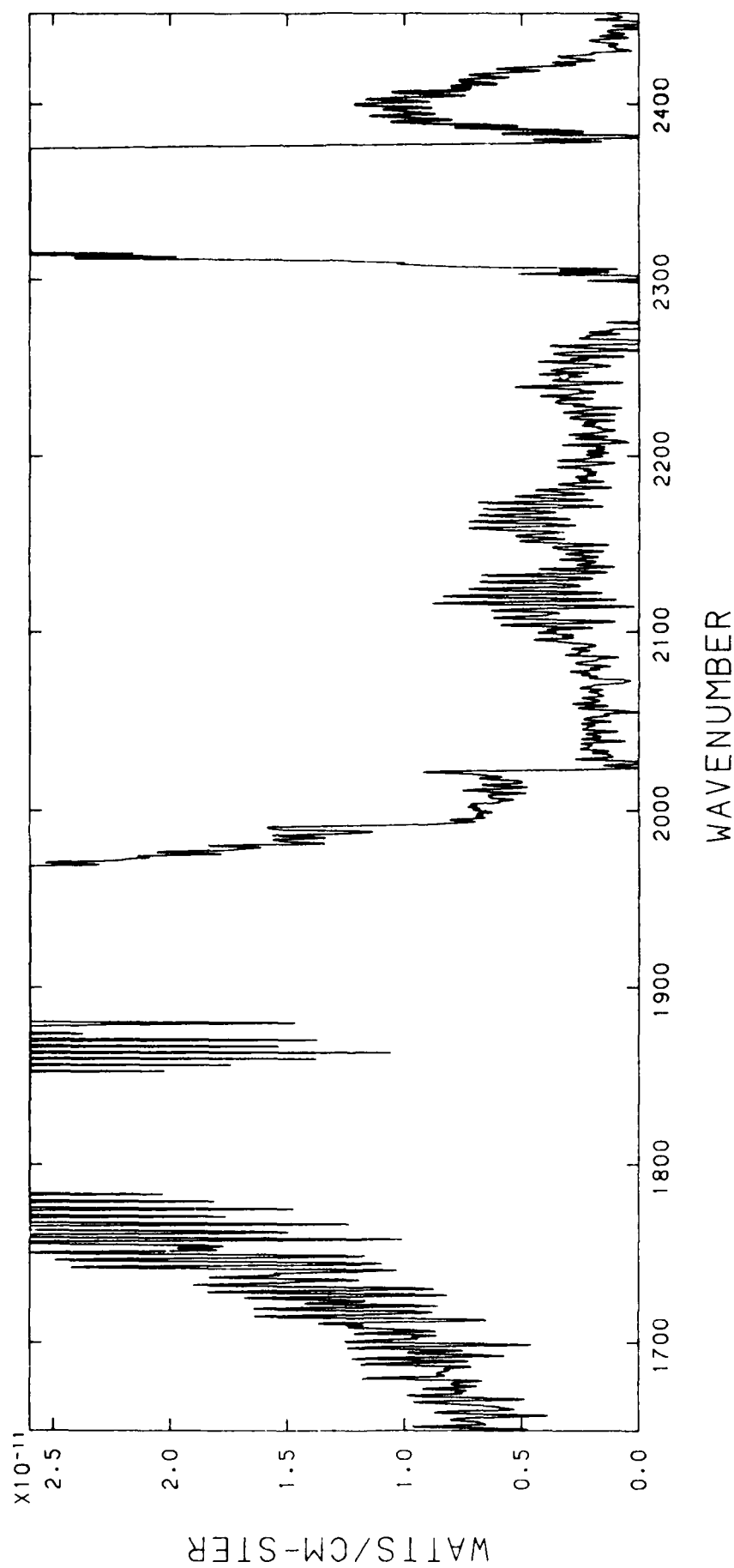
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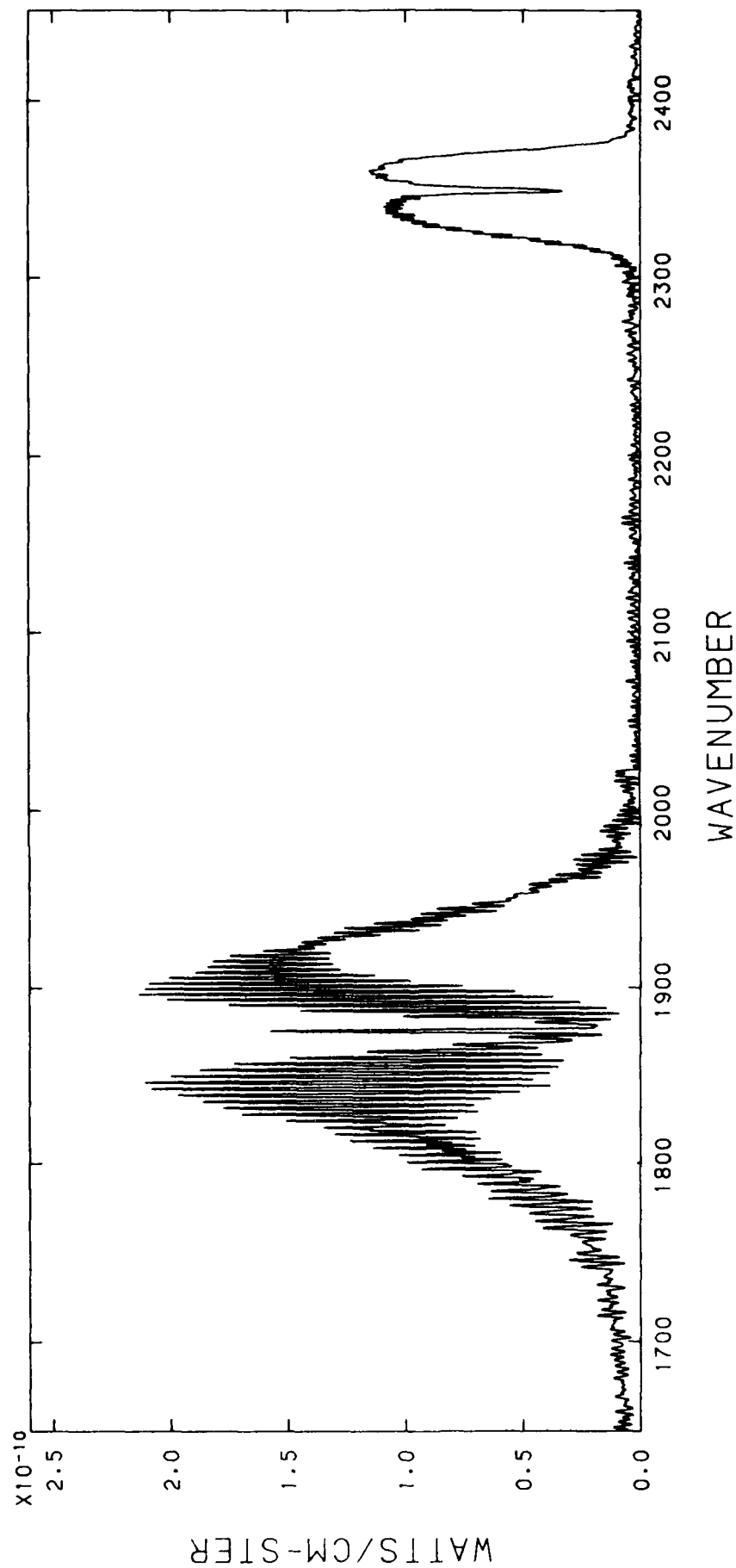


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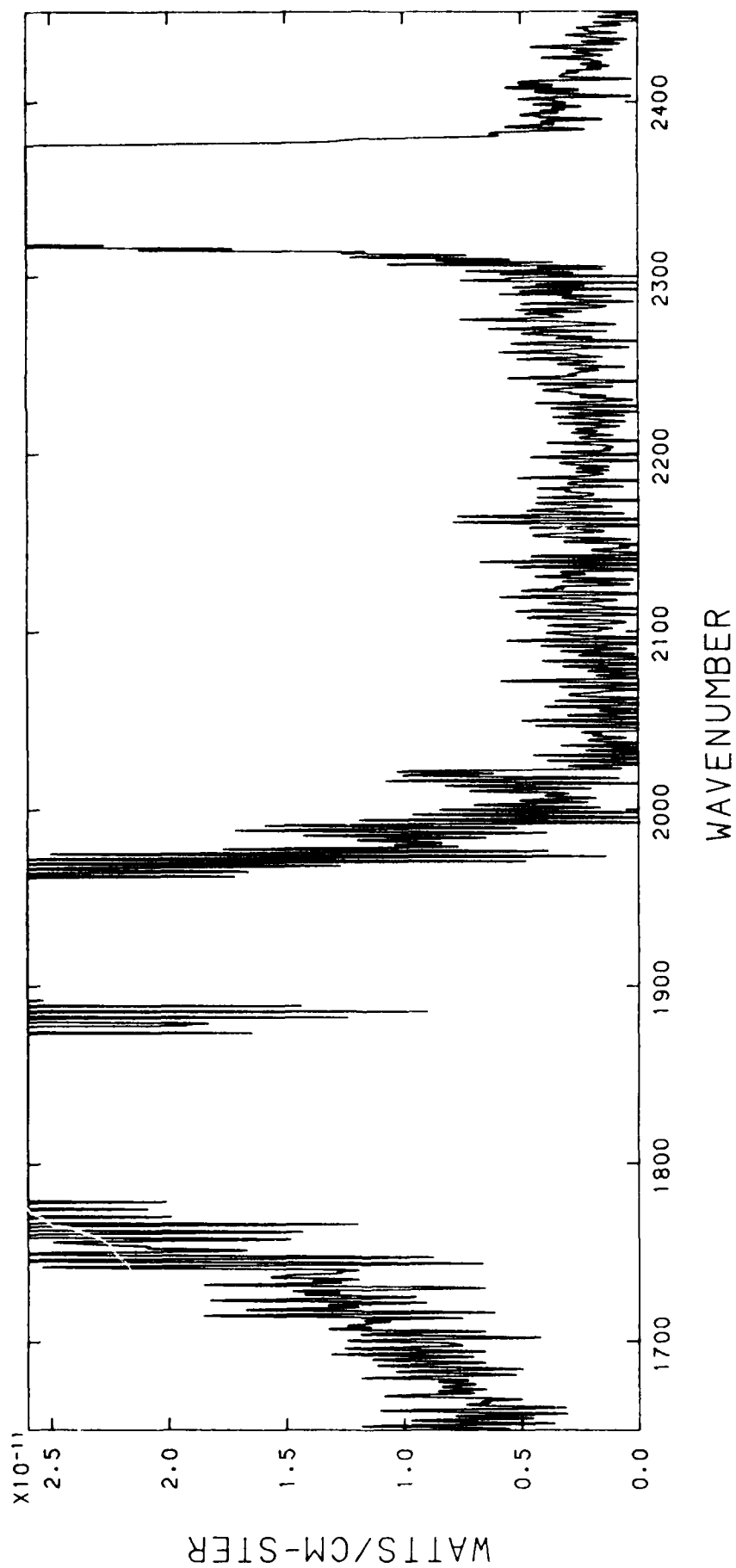
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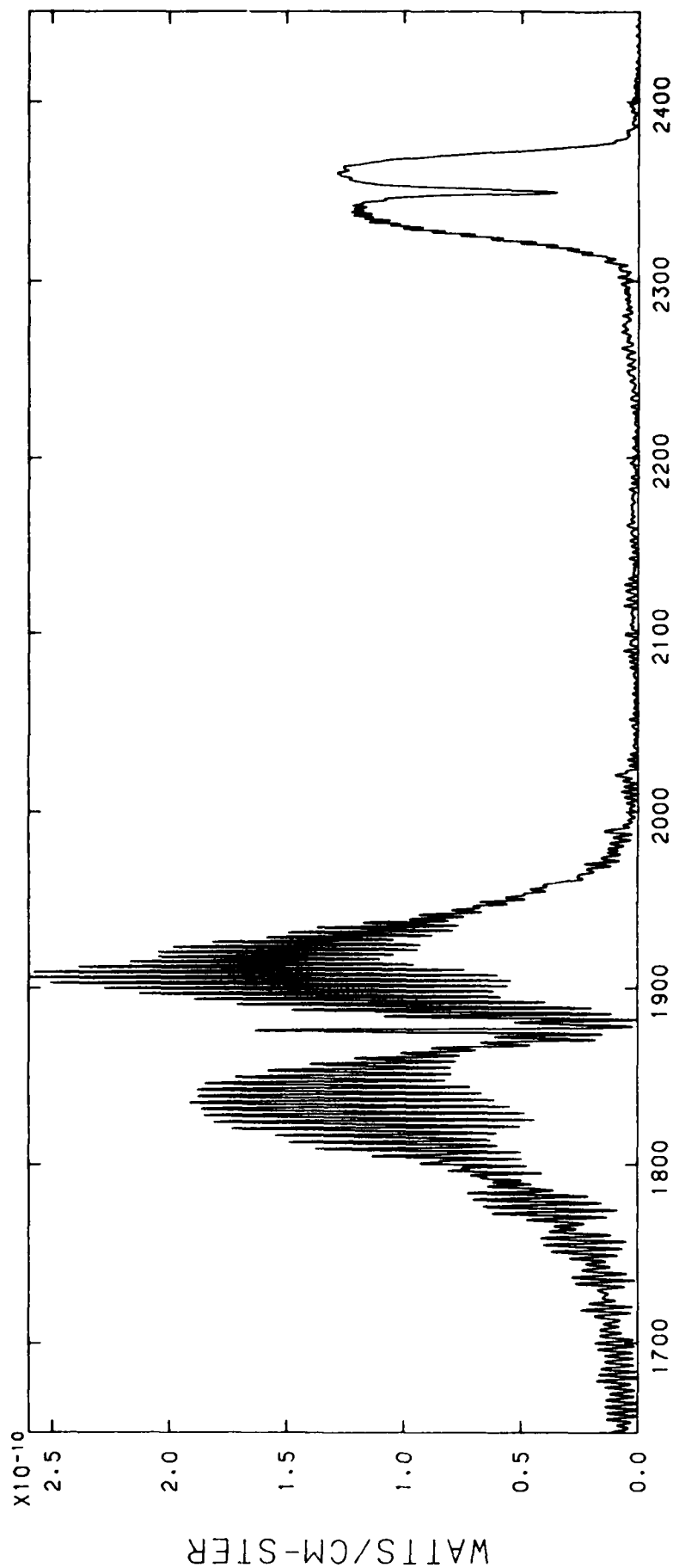
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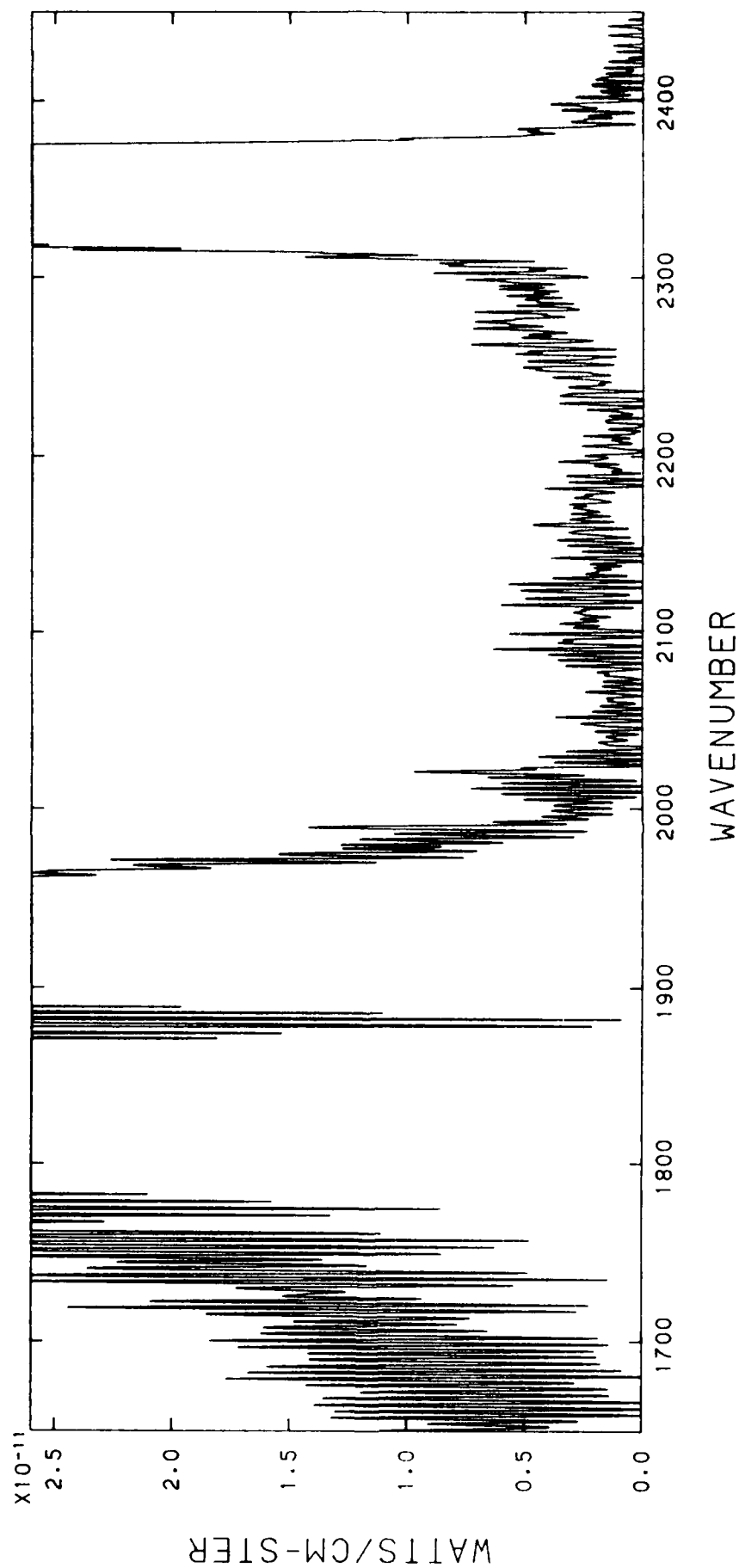


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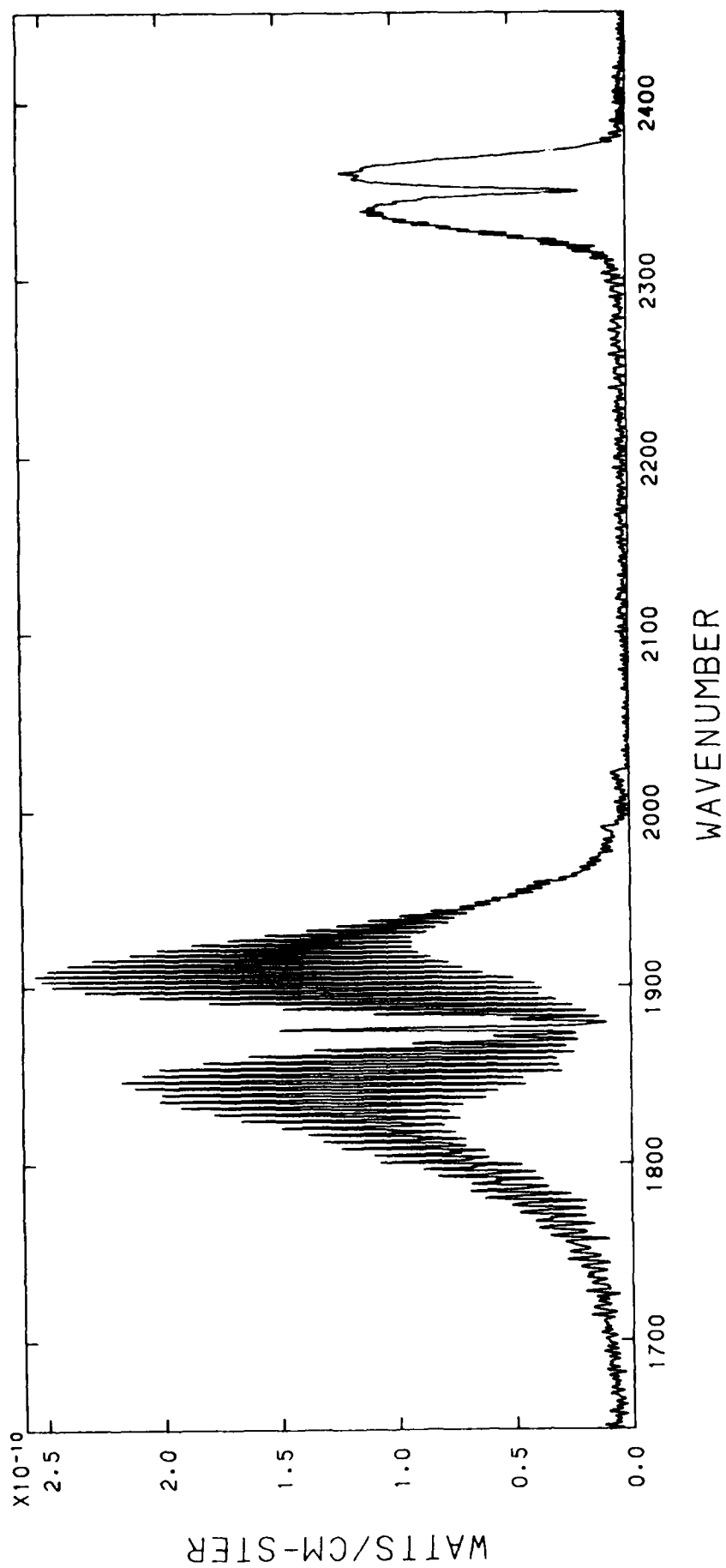
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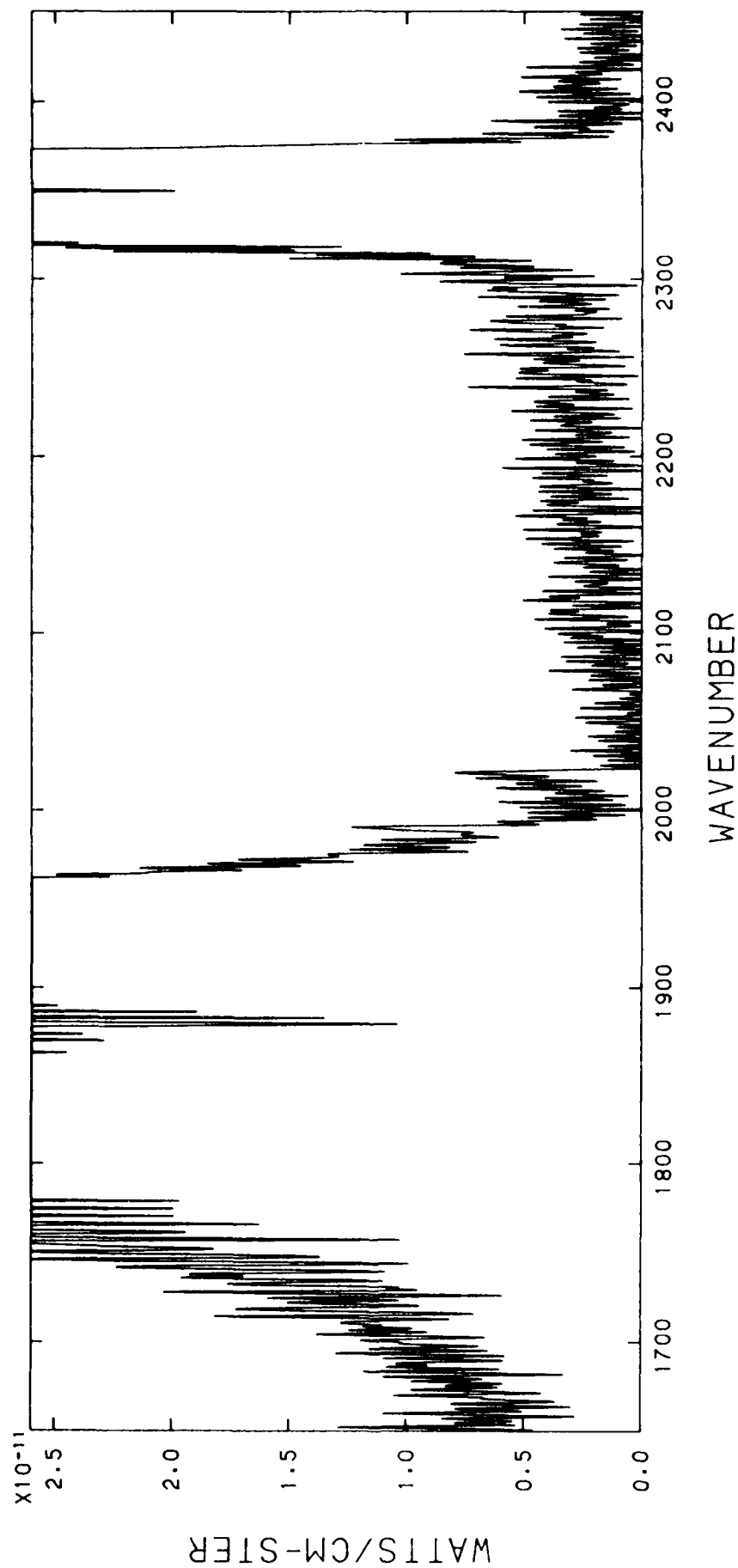
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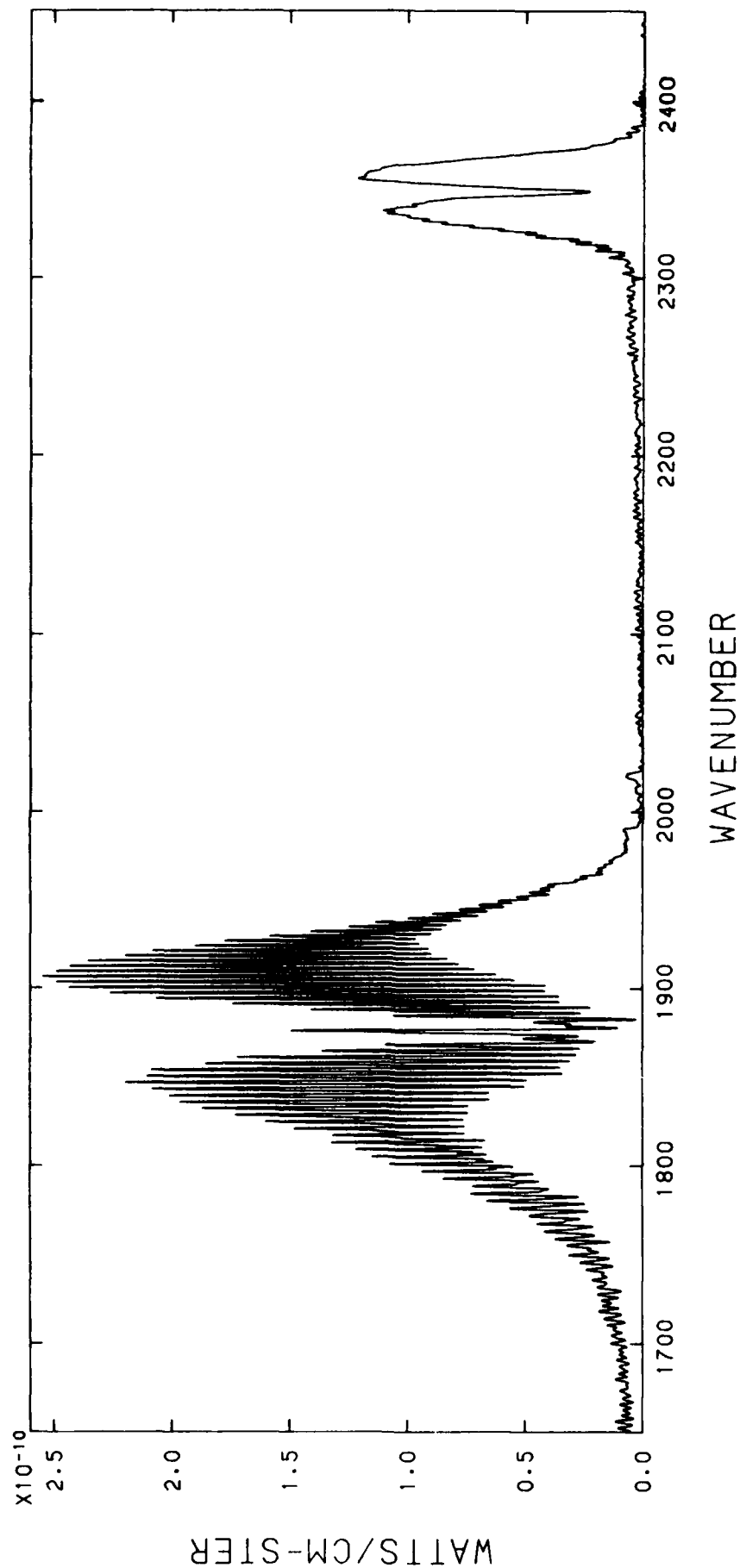


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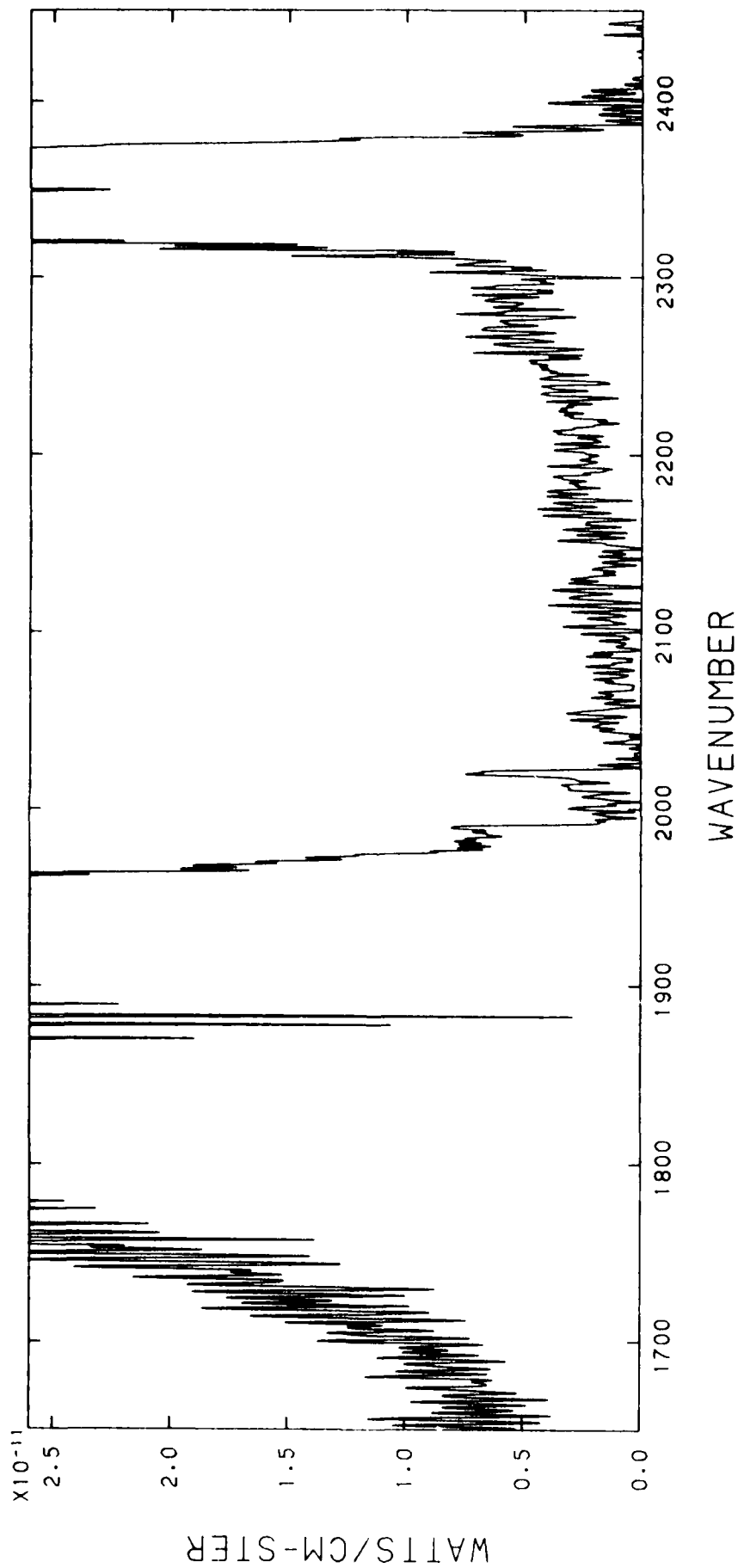


FILE 8, TIME 9: 7:54.732, ALT 96.4- 97.9 KM



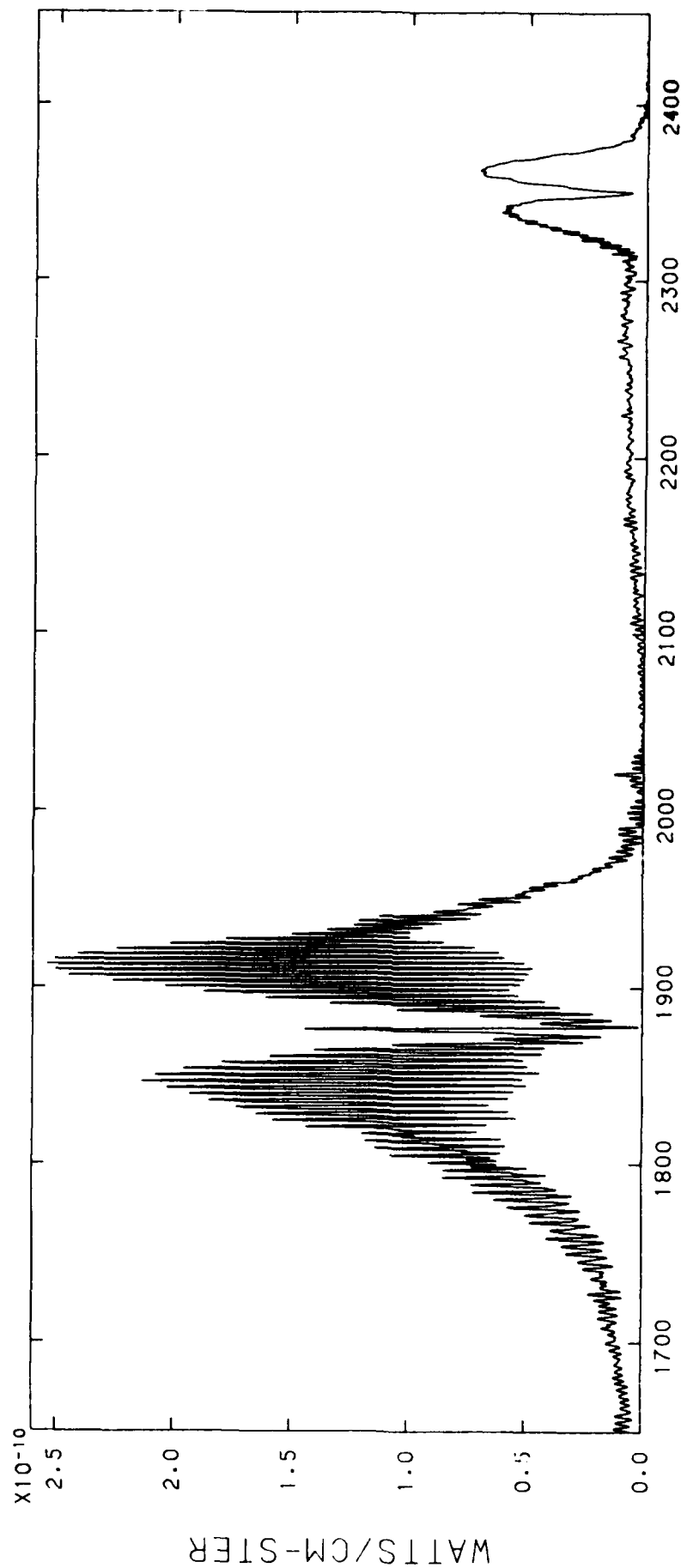
FILE 9, TIME 9: 7:56.360, ALT 97.9- 99.3 KM

23-NOV-83 23:02



FILE 9, TIME 9: 7:56.360, ALT 97.9- 99.3 KM

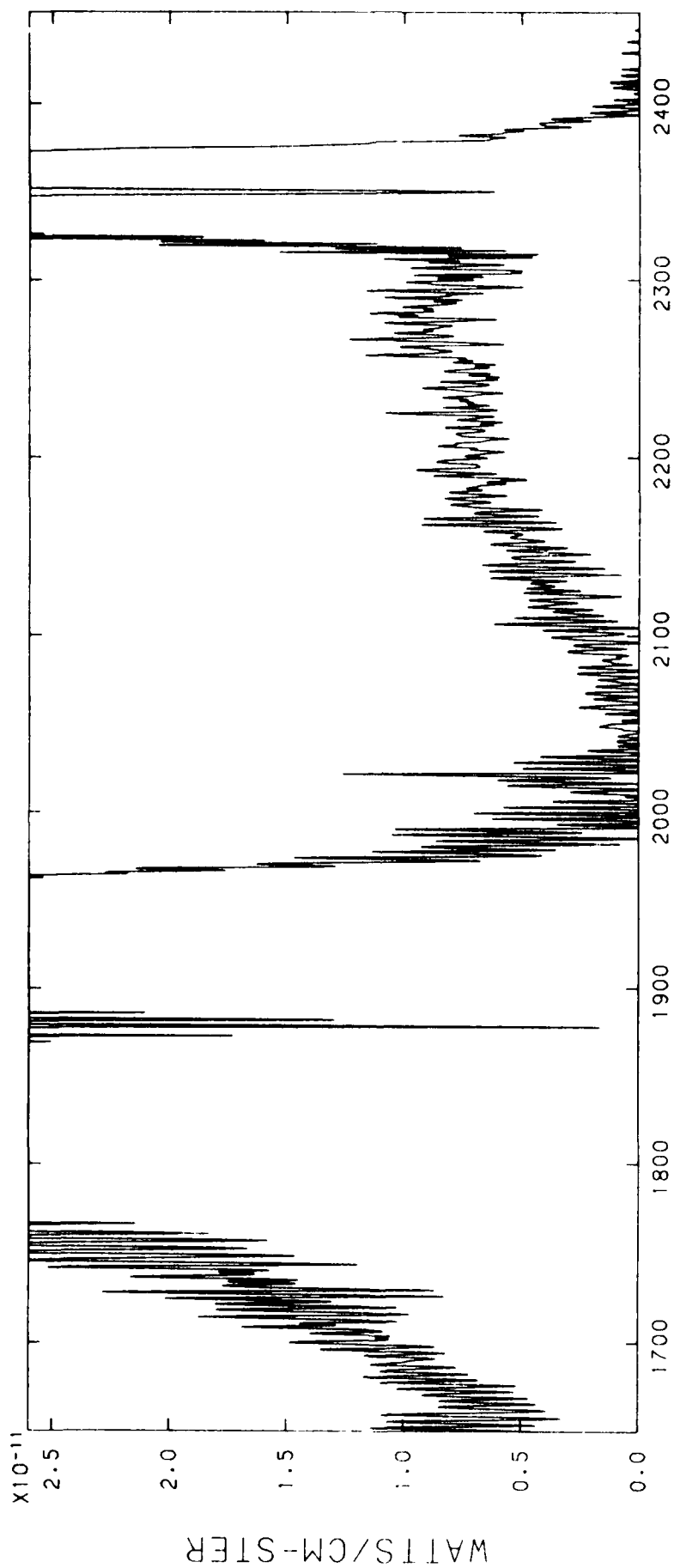
23-NOV-83 23:03



FILE 10, TIME 9: 7:57.990, ALT 99.3-100.7 KM

23-NOV-83 23:03

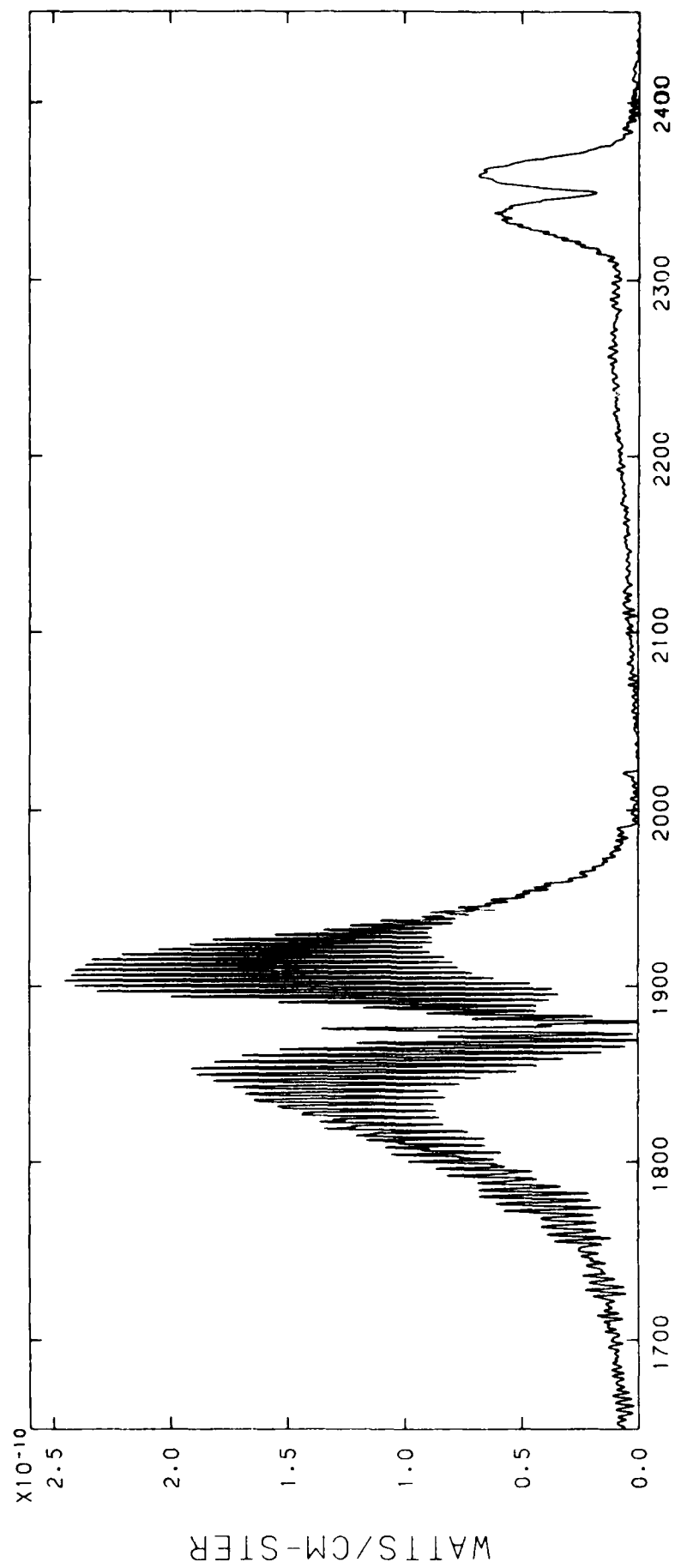




WAVENUMBER

FILE 10, TIME 9: 7:57.990, ALT 99.3-100.7 KM

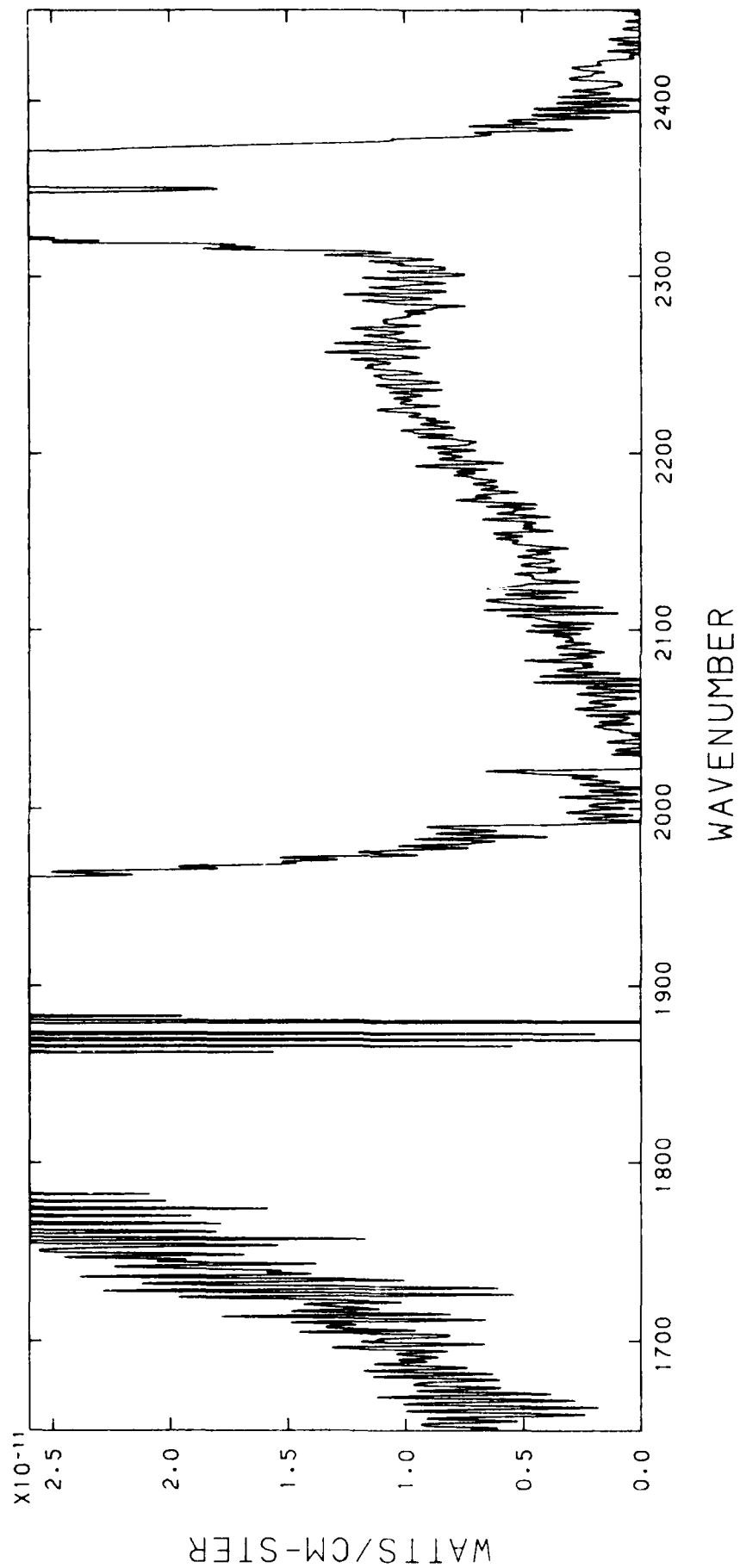
23-NOV-83 23:03



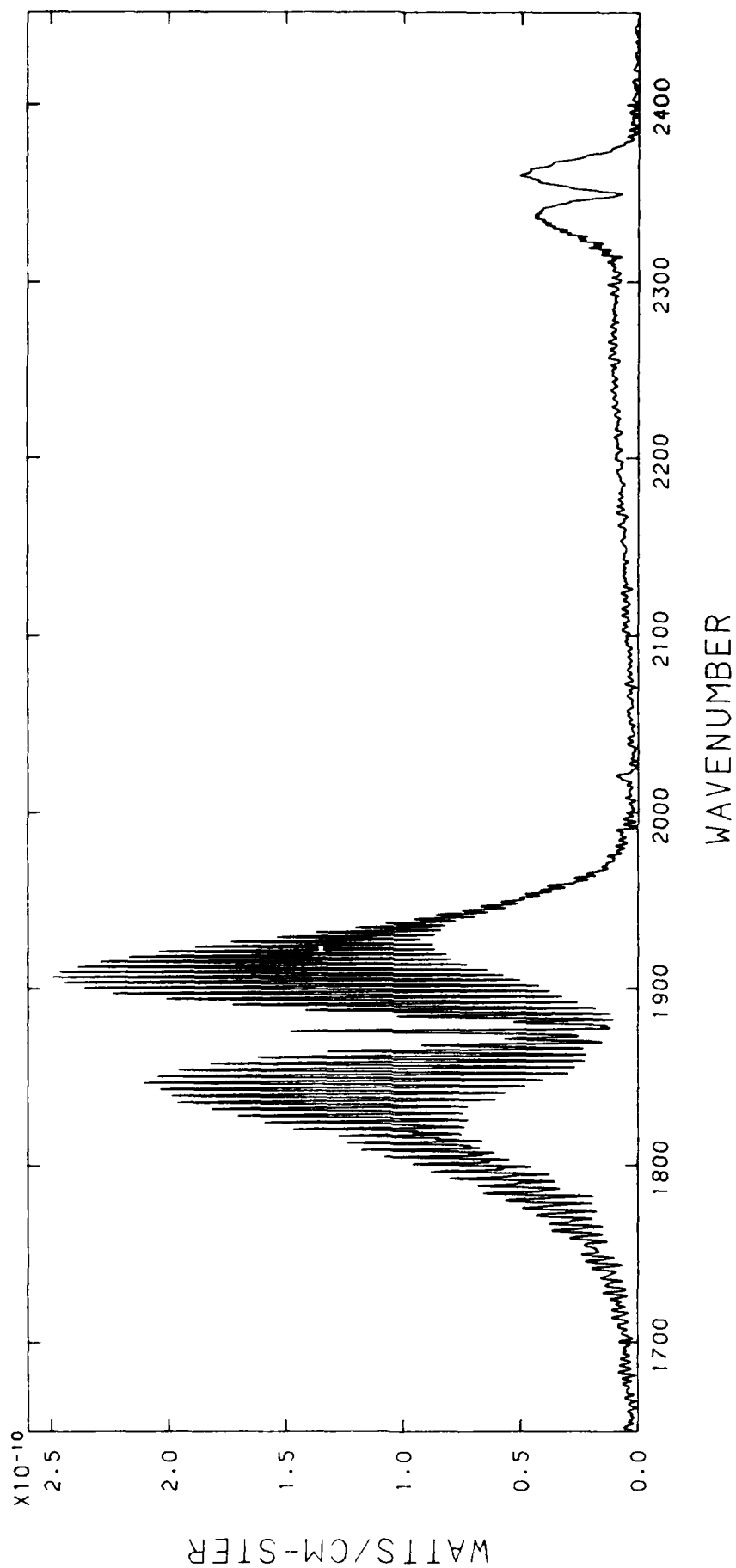
WAVENUMBER

FILE 11, TIME 9: 7:59.618, ALT 100.7-102.1 KM

23-NOV-83 23:03

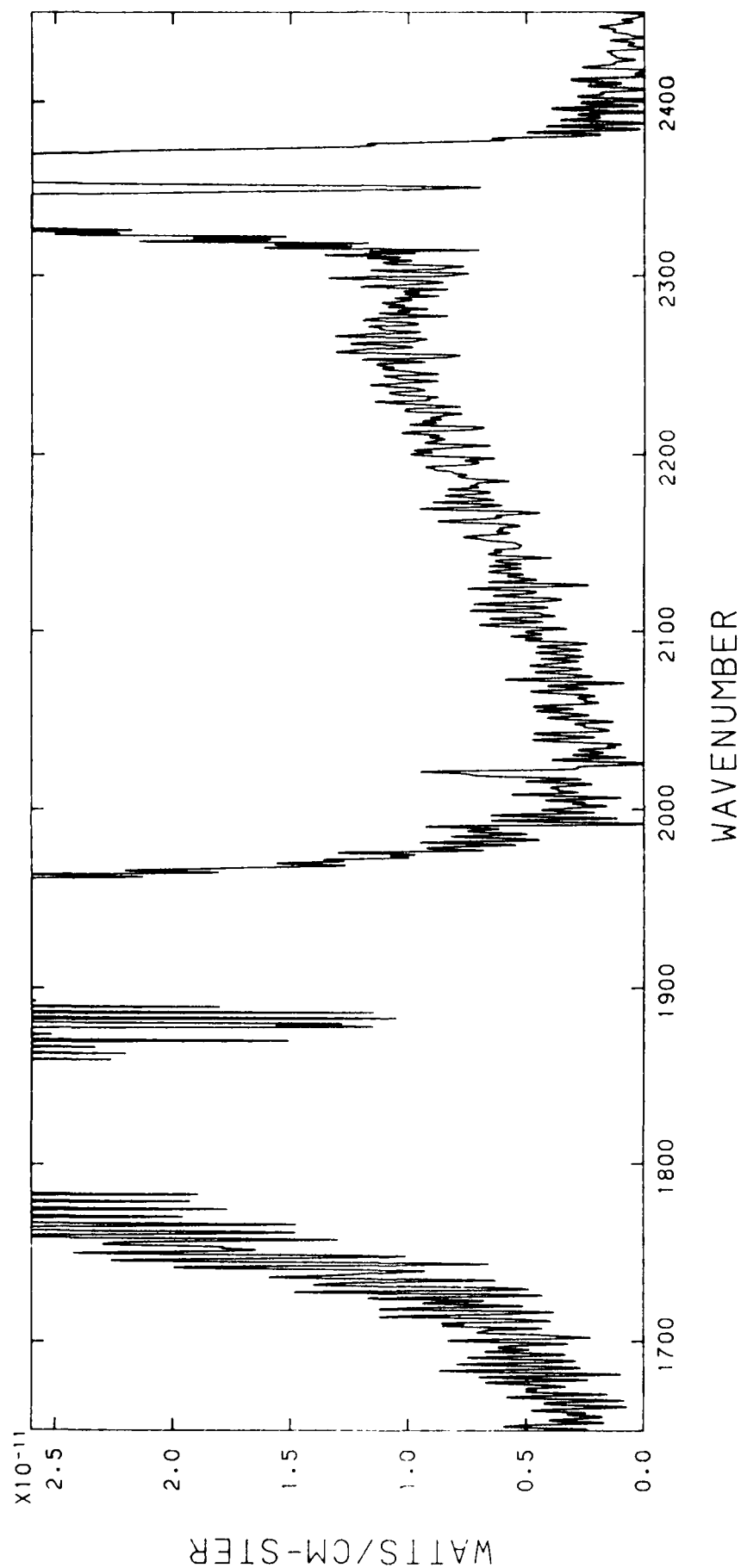


FILE 11, TIME 9: 7:59.618, ALT 100.7-102.1 KM

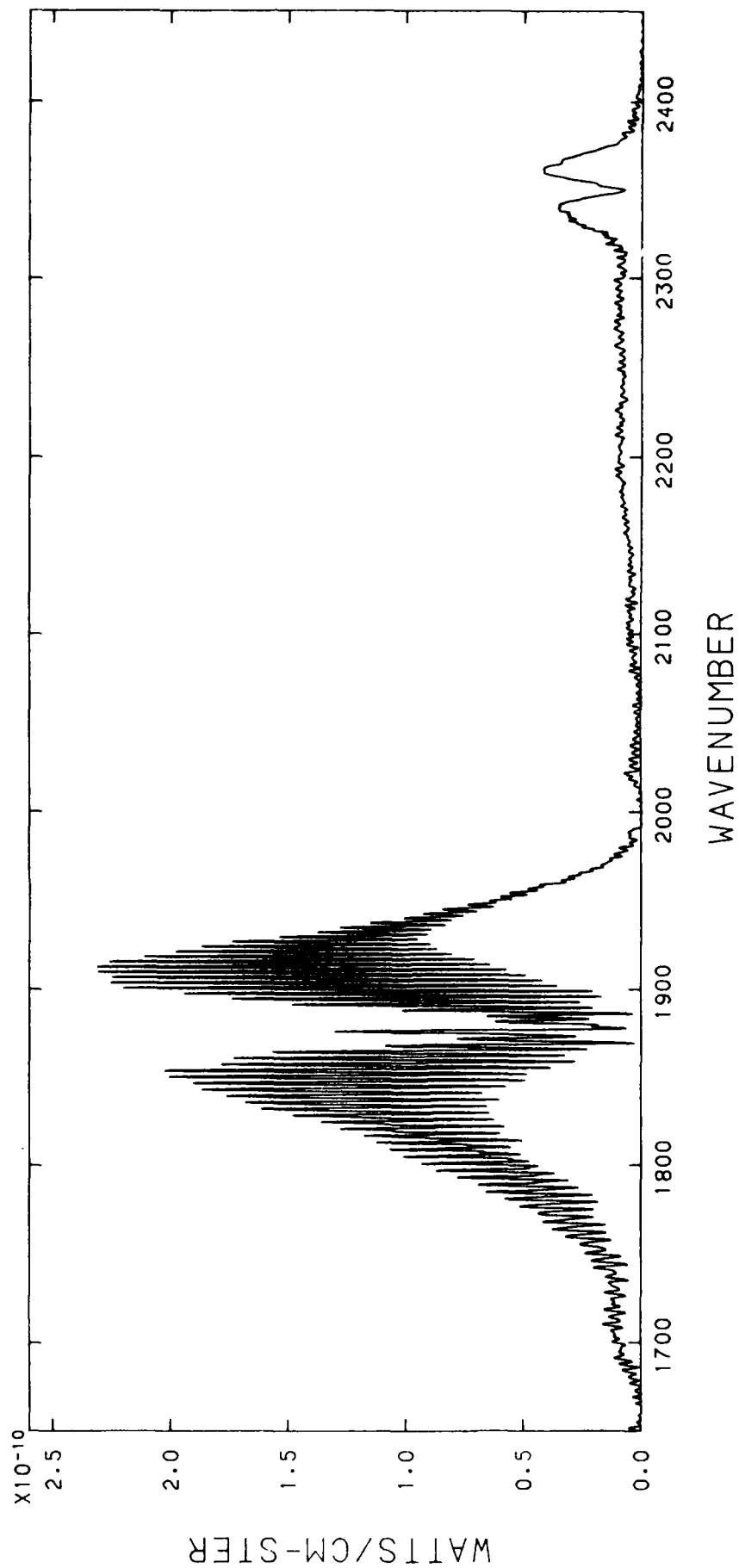


FILE 12, TIME 9: 8: 1.250, ALT 102.1-103.4 KM

23-NOV-83 23:03

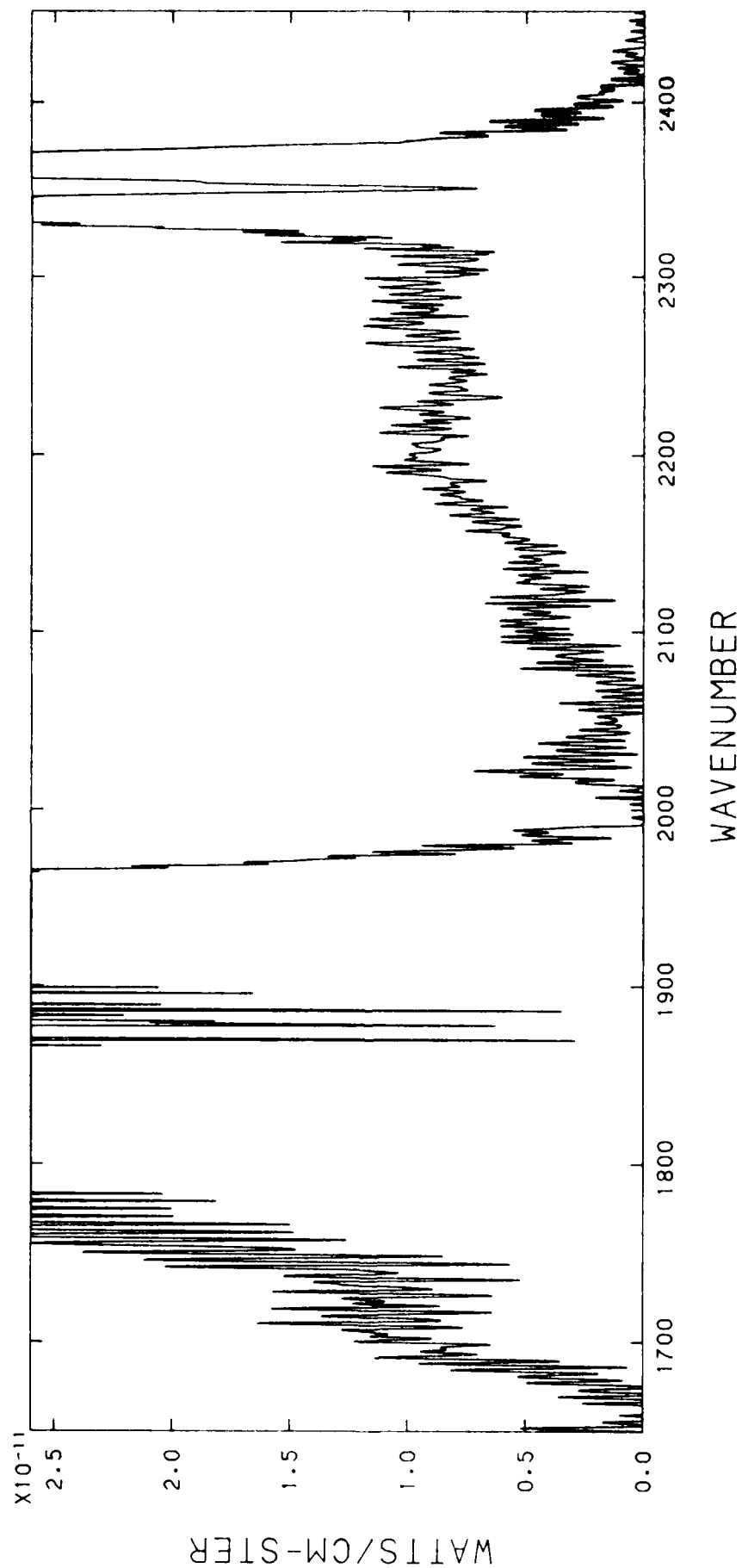


FILE 12, TIME 9: 8: 1.250, ALT 102.1-103.4 KM

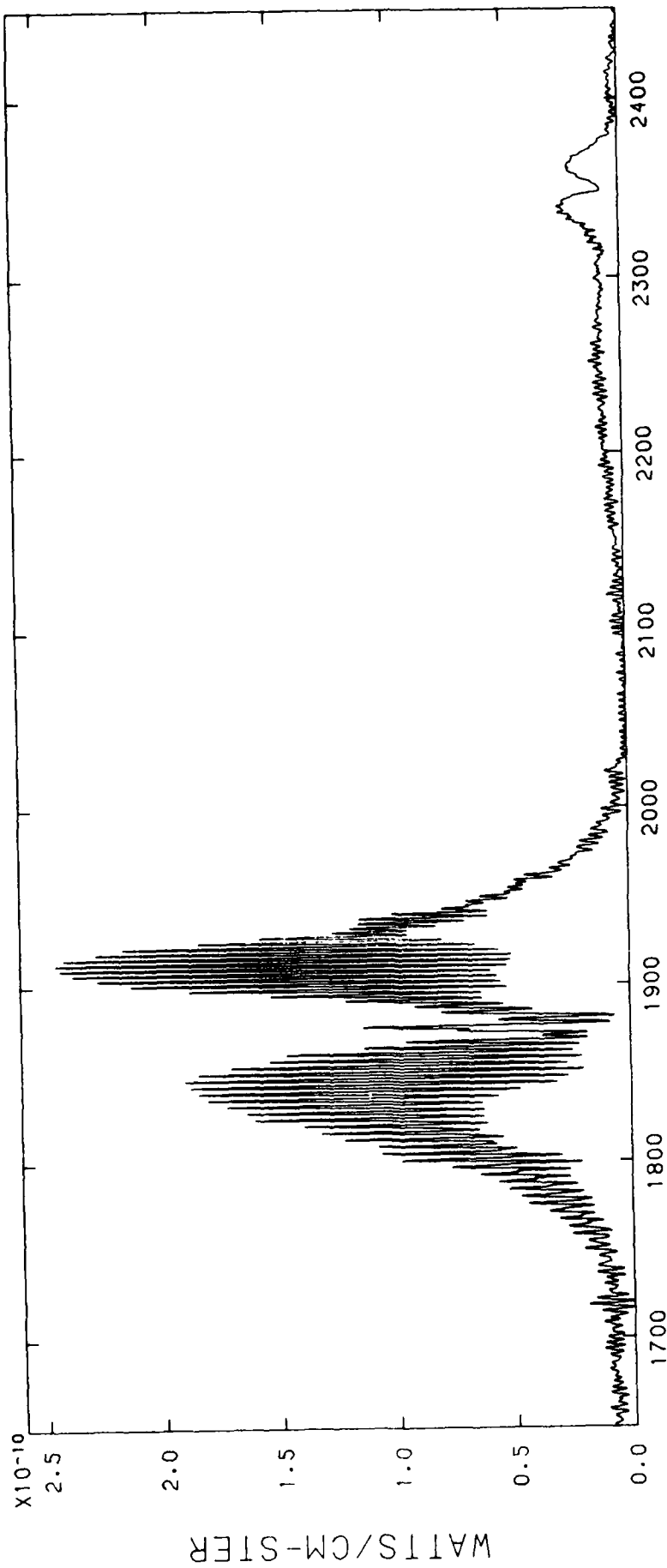


FILE 13, TIME 9: 8: 2.878, ALT 103.4-104.8 KM

23-NOV-83 23:03



FILE 13, TIME 9: 8: 2.878, ALT 103.4-104.8 KM

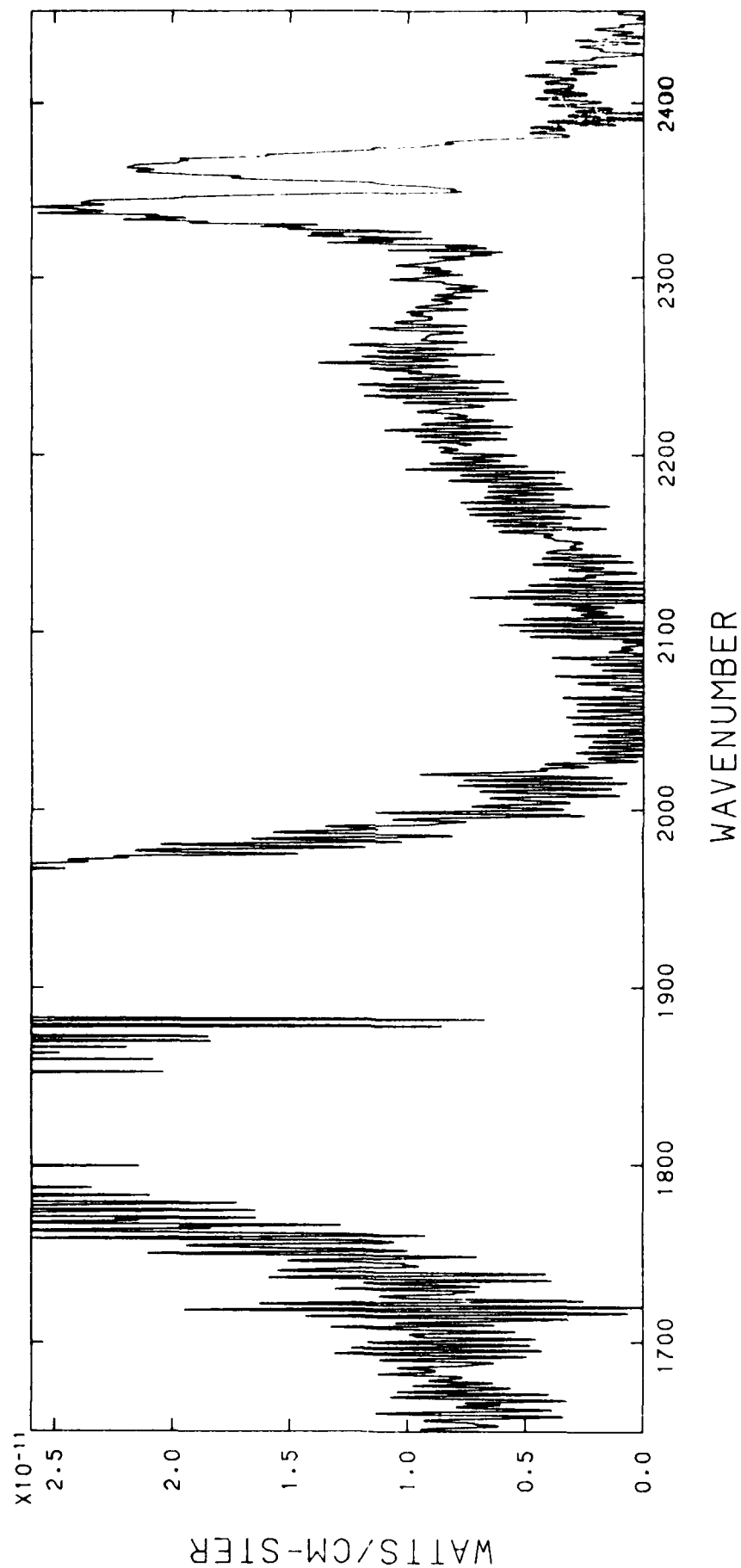


WAVENUMBER

FILE 14, TIME 9: 8: 4.508, ALT 104.8-106.1 KM

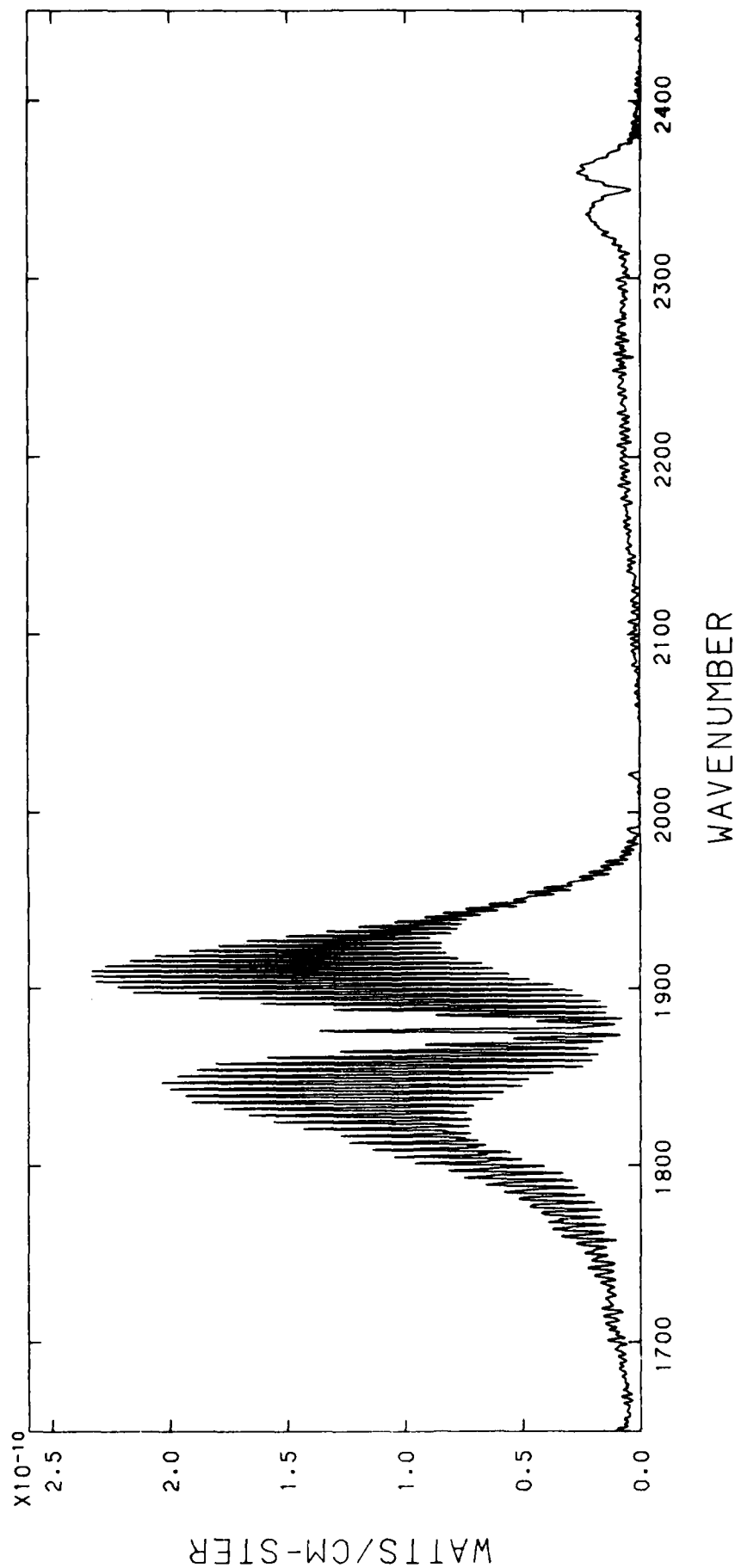
23-NOV-83 23:03





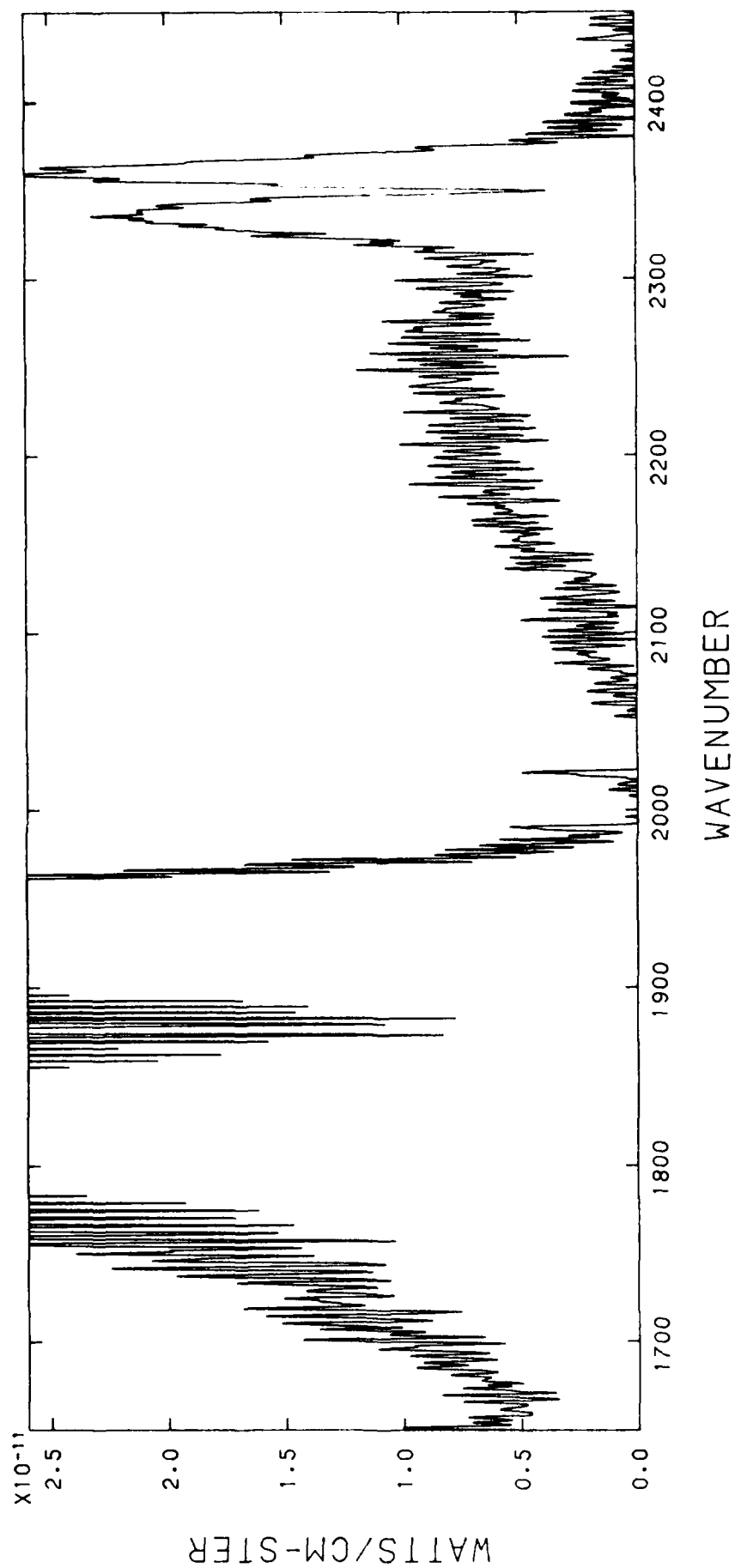
FILE 14, TIME 9: 8: 4.508, ALT 104.8-106.1 KM

23-NOV-83 23:03



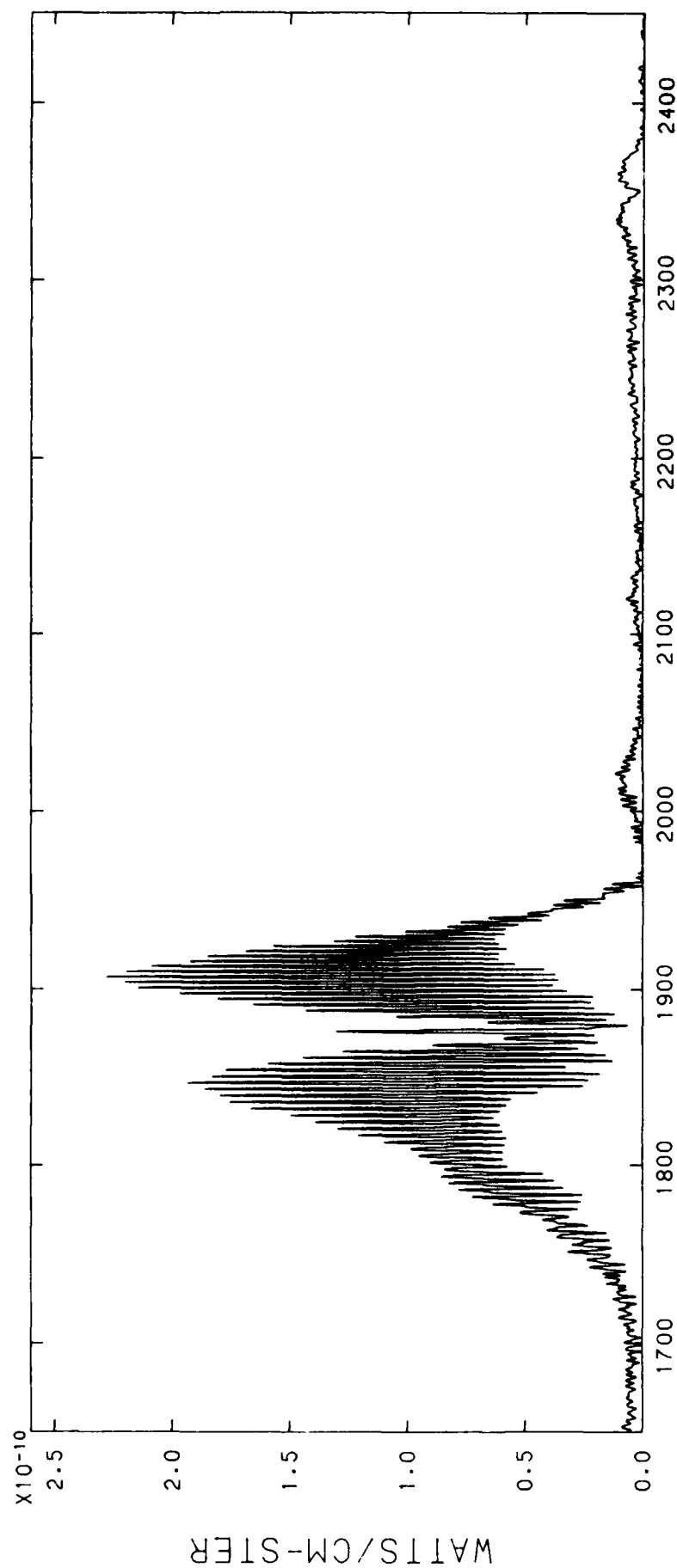
FILE 15, TIME 9: 8: 6.138, ALT 106.1-107.3 KM

23-NOV-83 23:03



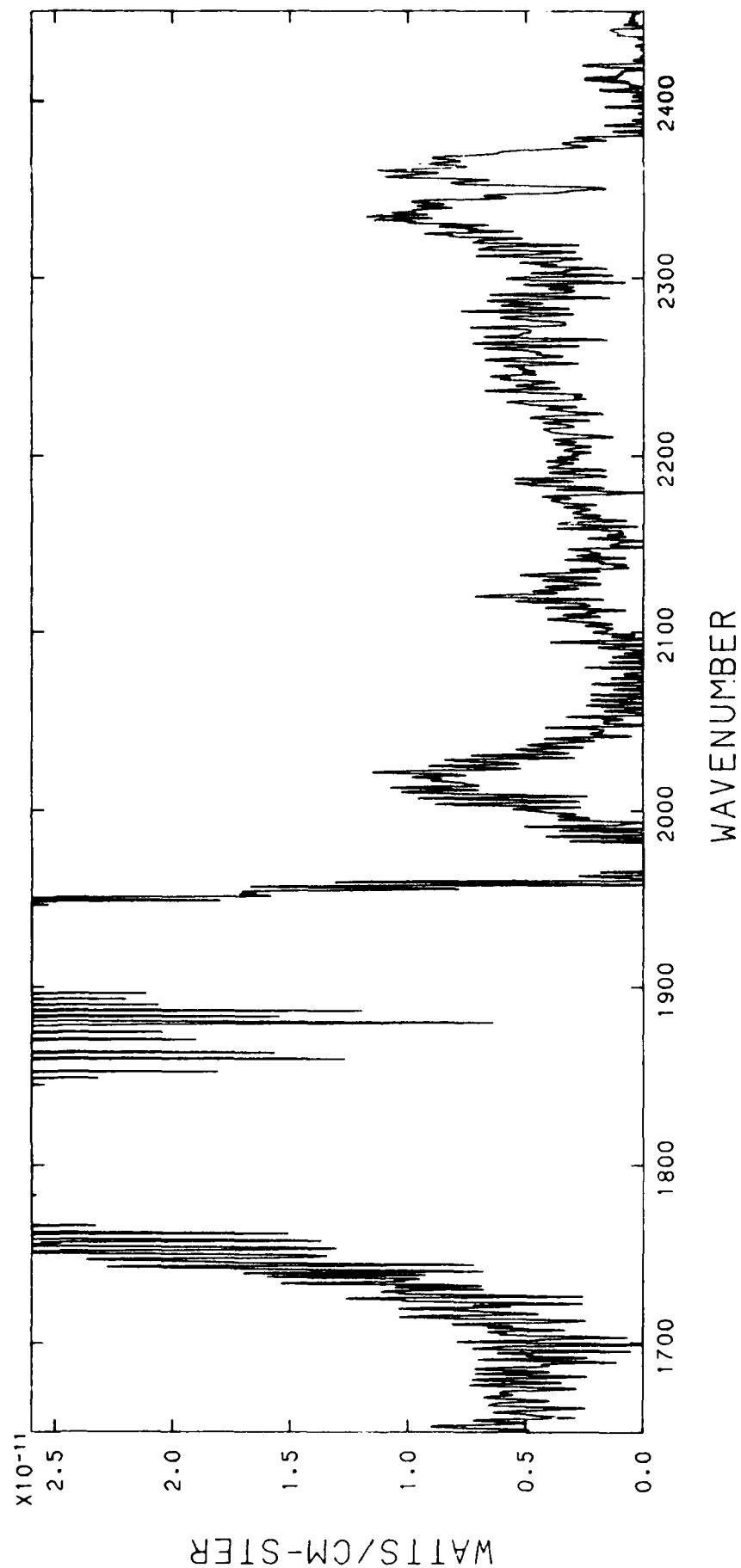
FILE 15, TIME 9: 8: 6.138, ALT 106.1-107.3 KM

23-NOV-83 23:03

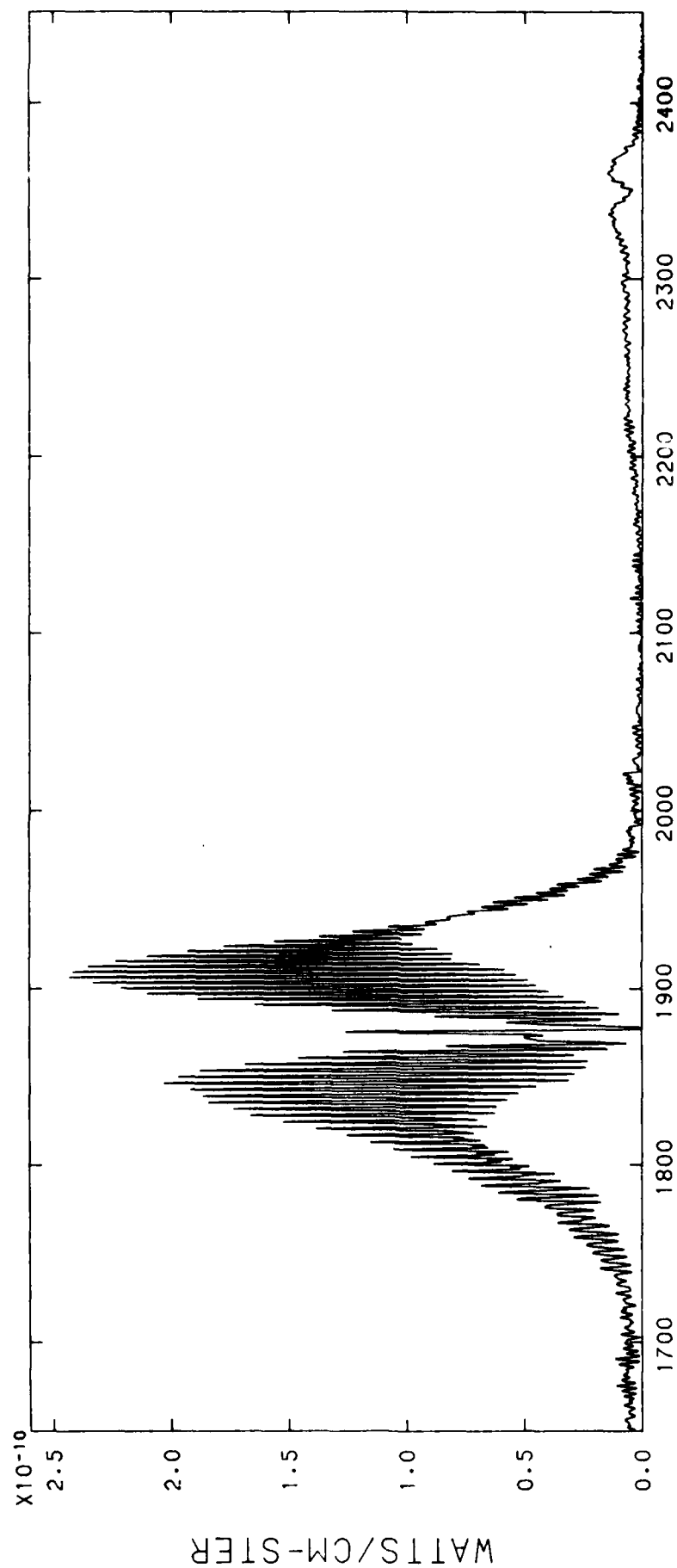


FILE 16, TIME 9: 8: 7.768, ALT 107.3-108.6 KM

23-NOV-83 23:03



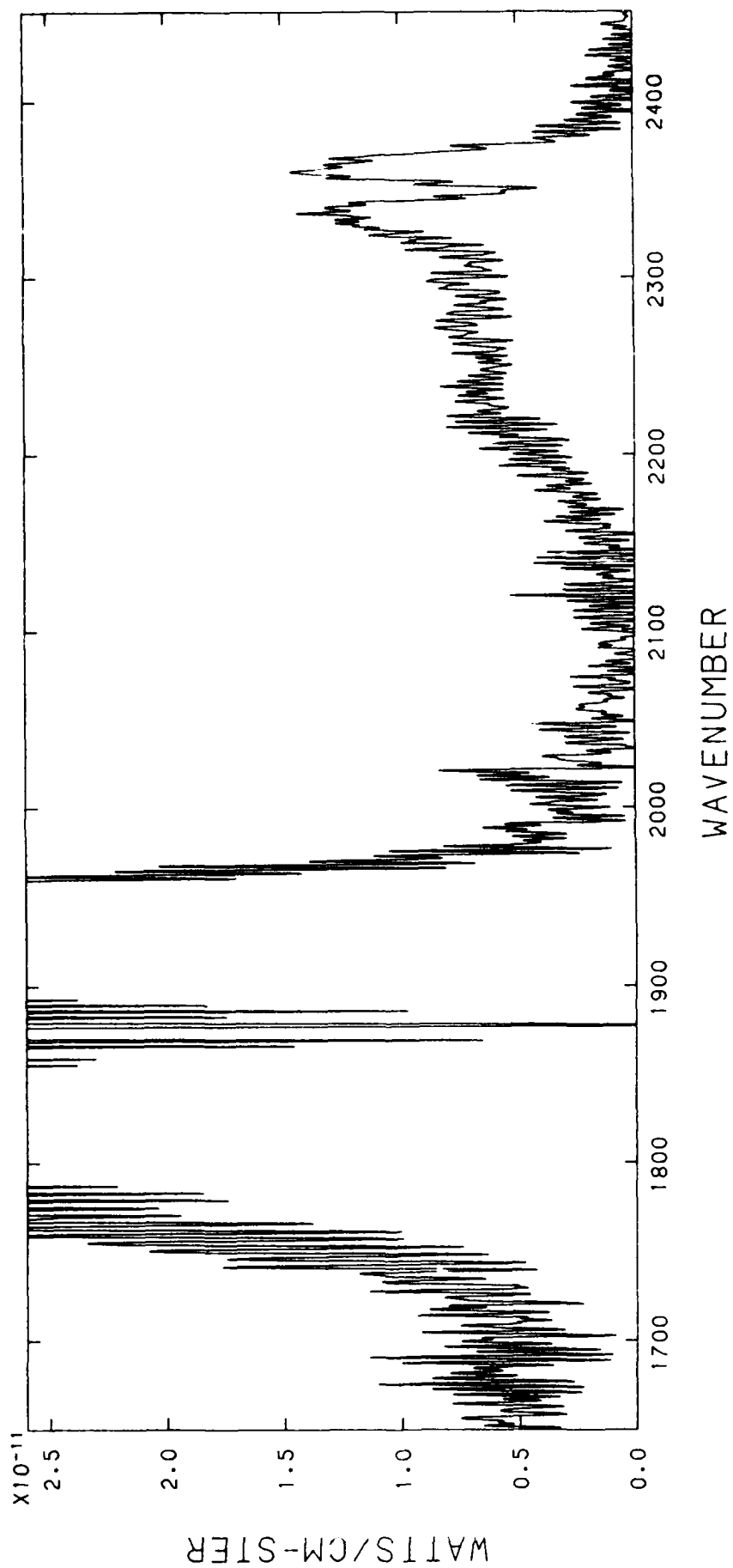
FILE 16, TIME 9: 8: 7.768, ALT 107.3-108.6 KM



WAVENUMBER

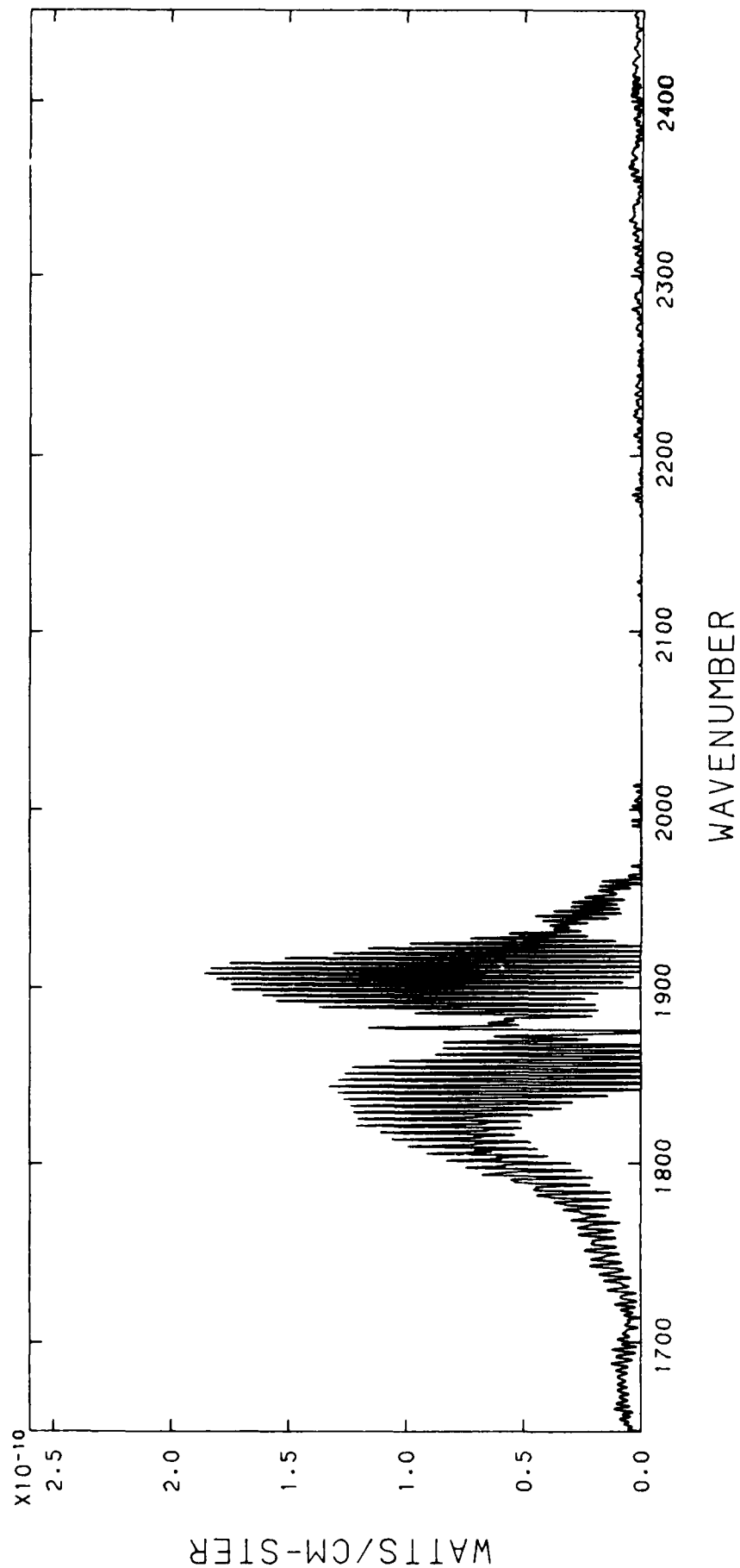
FILE 17, TIME 9: 8: 9.402, ALT 108.6-109.8 KM

23-NOV-83 23:04



FILE 17, TIME 9: 8: 9.402, ALT 108.6-109.8 KM

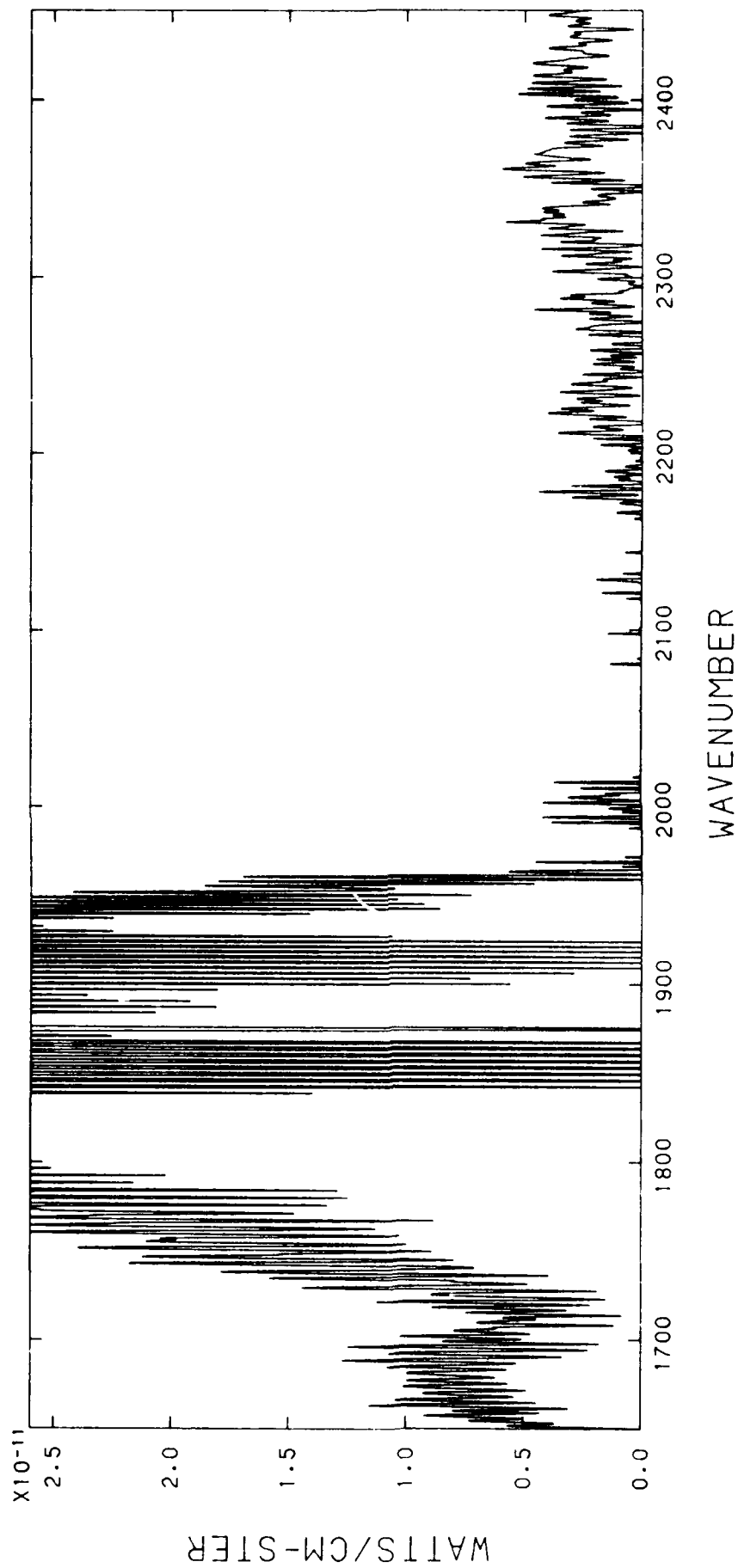
23-NOV-83 23:04



FILE 18, TIME 9: 8:11. 36, ALT 109.8-111.0 KM

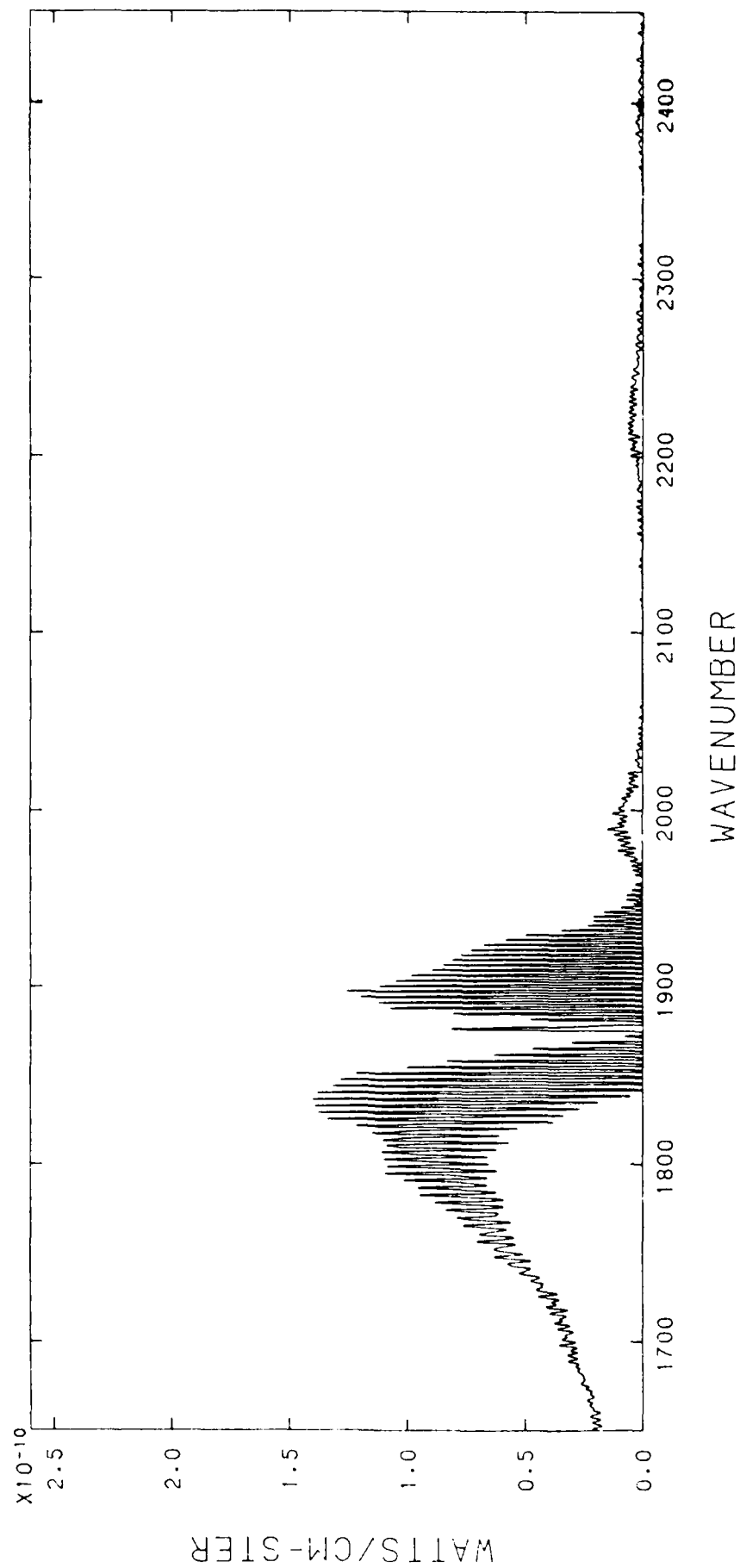
23-NOV-83 23:04



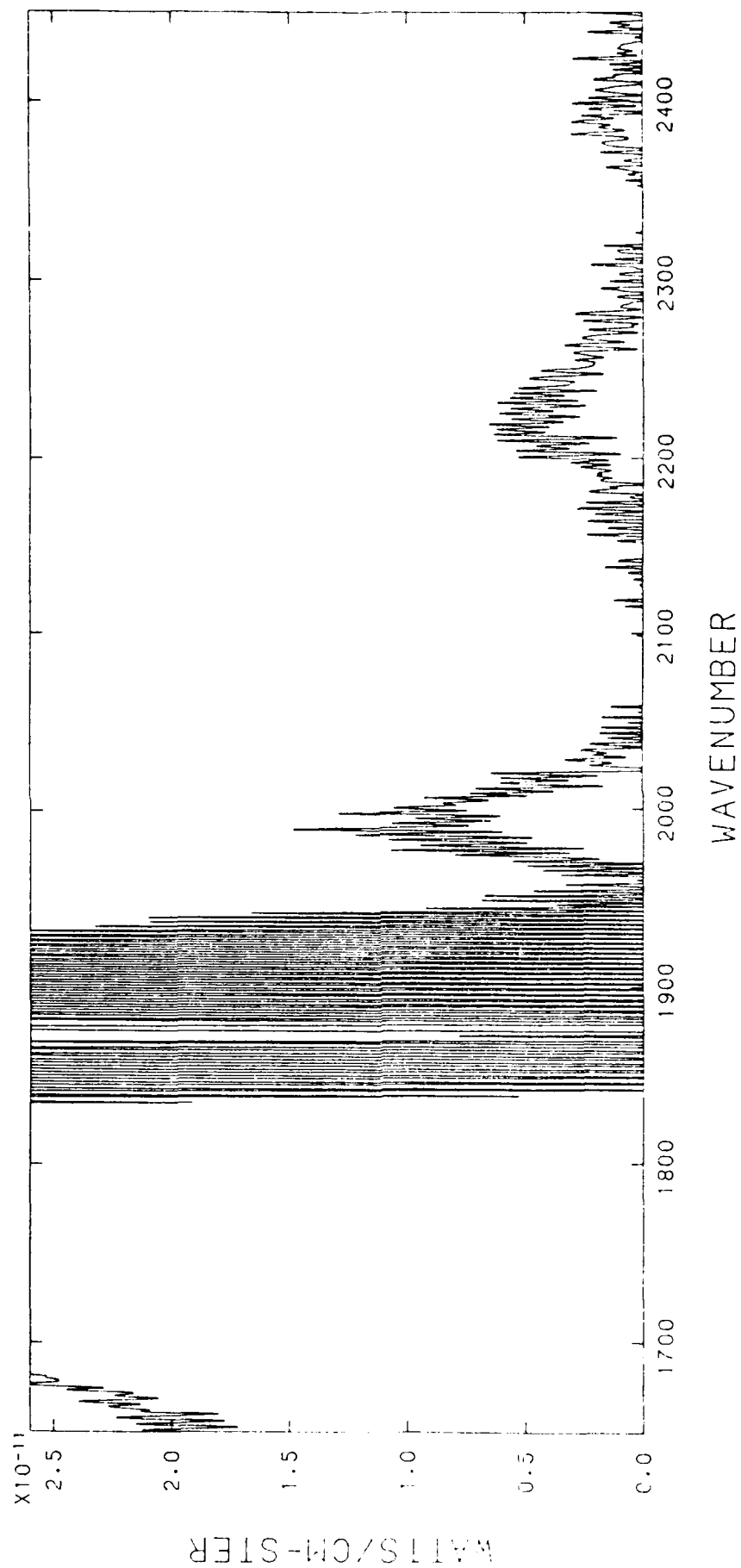


FILE 18. TIME 9: 8:11. 36. ALT 109.8-111.0 KM

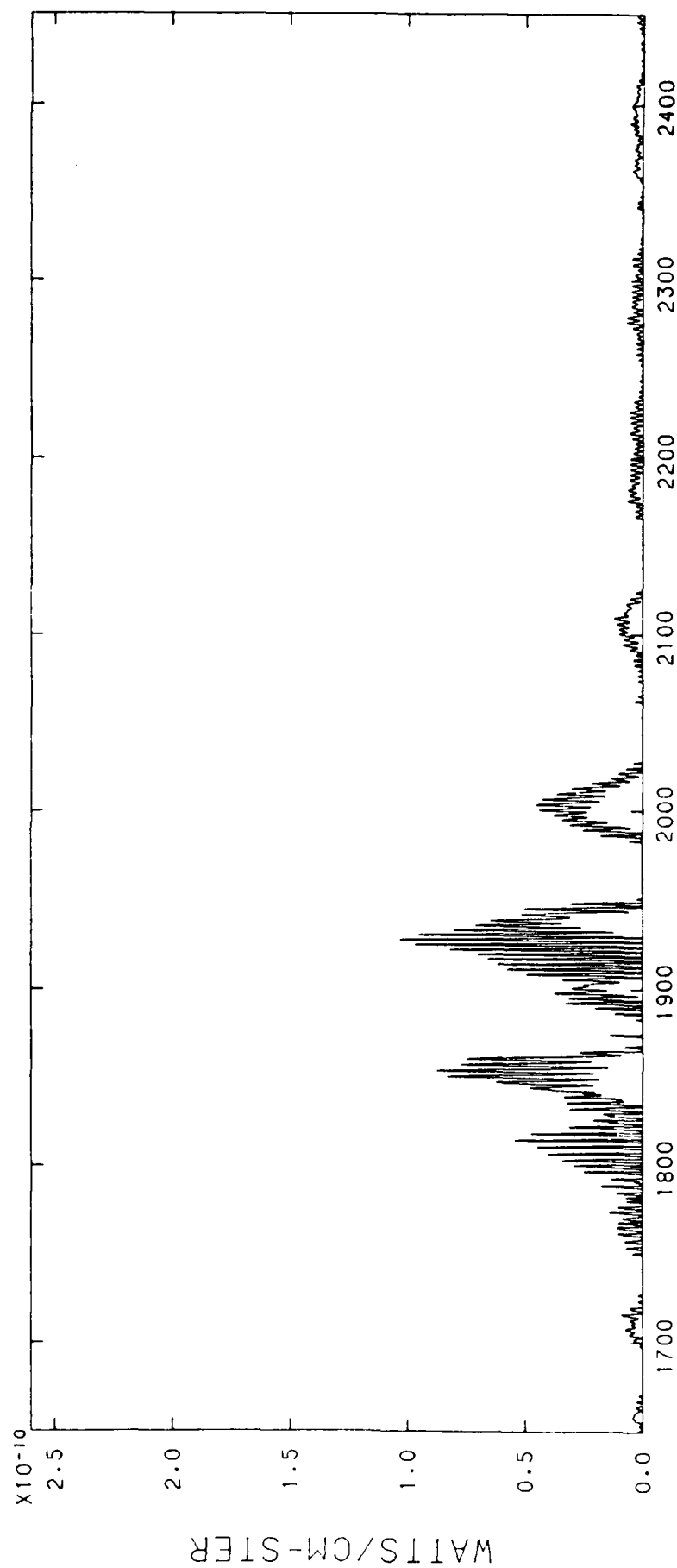
23-NOV-83 23:04



FILE 19, TIME 9: 8:12.666, ALT 111.0-112.2 KM

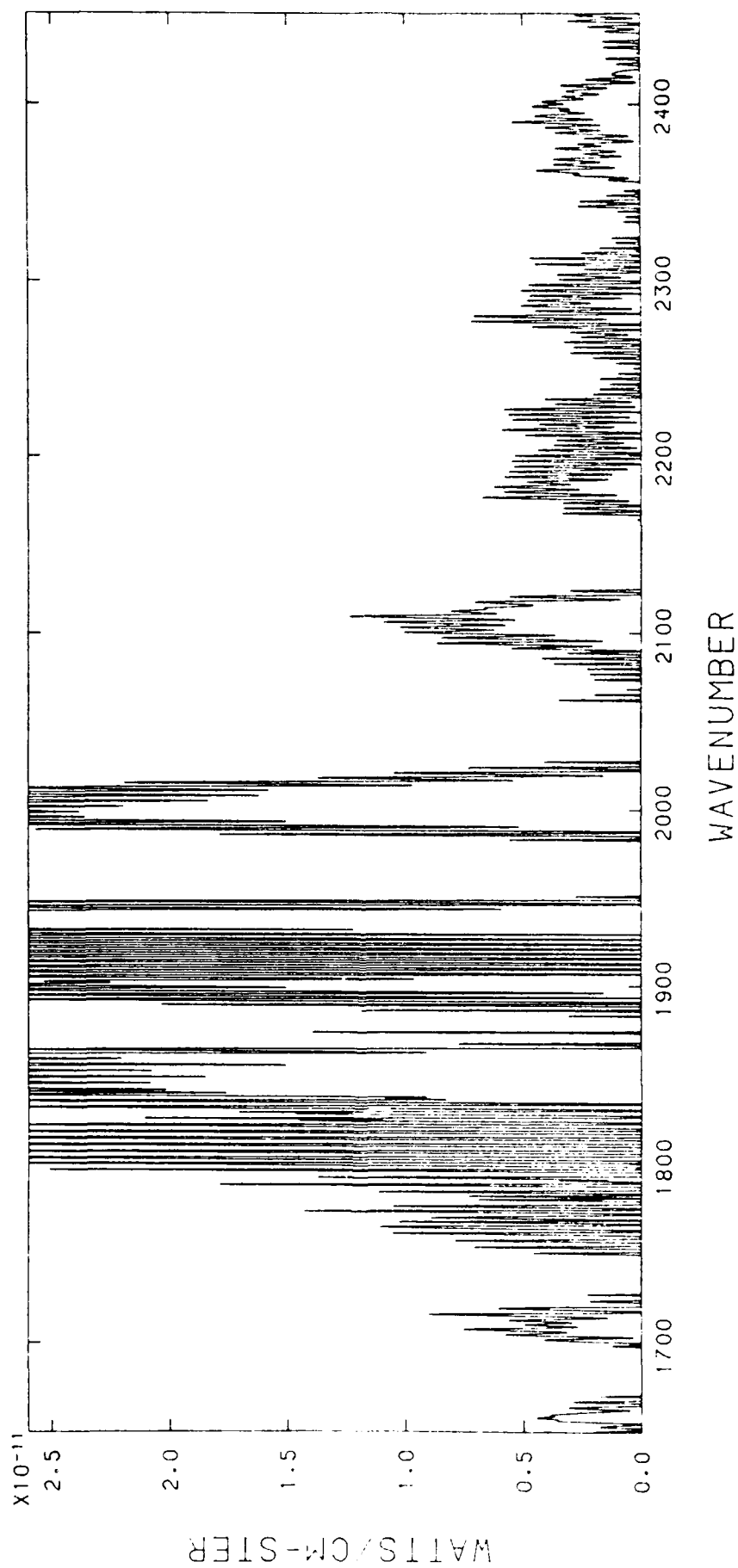


FILE 19, TIME 9: 8:12.666, ALT 111.0-112.2 KM



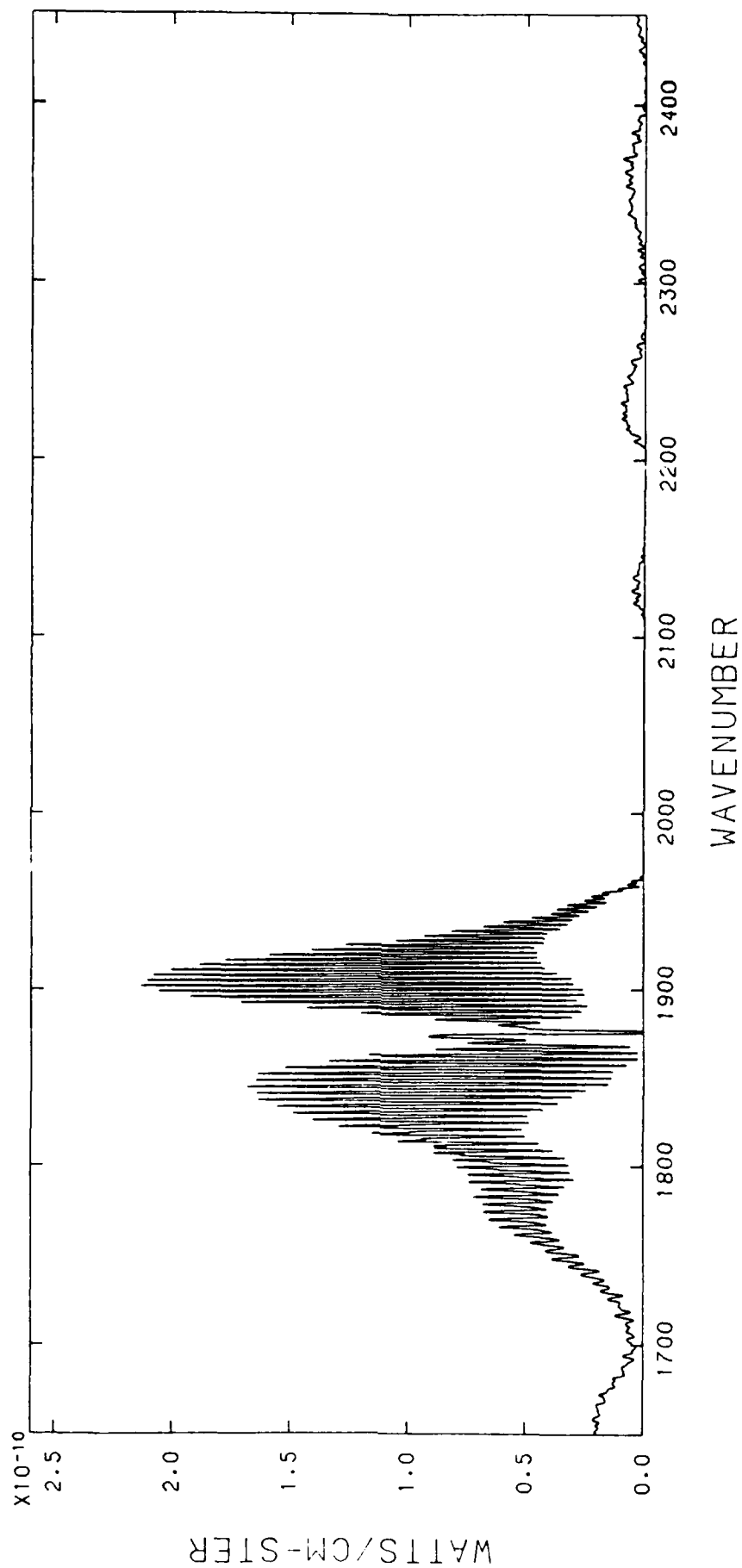
FILE 20, TIME 9: 8:14.324, ALT 112.2-113.4 KM

23-NOV-83 23:04



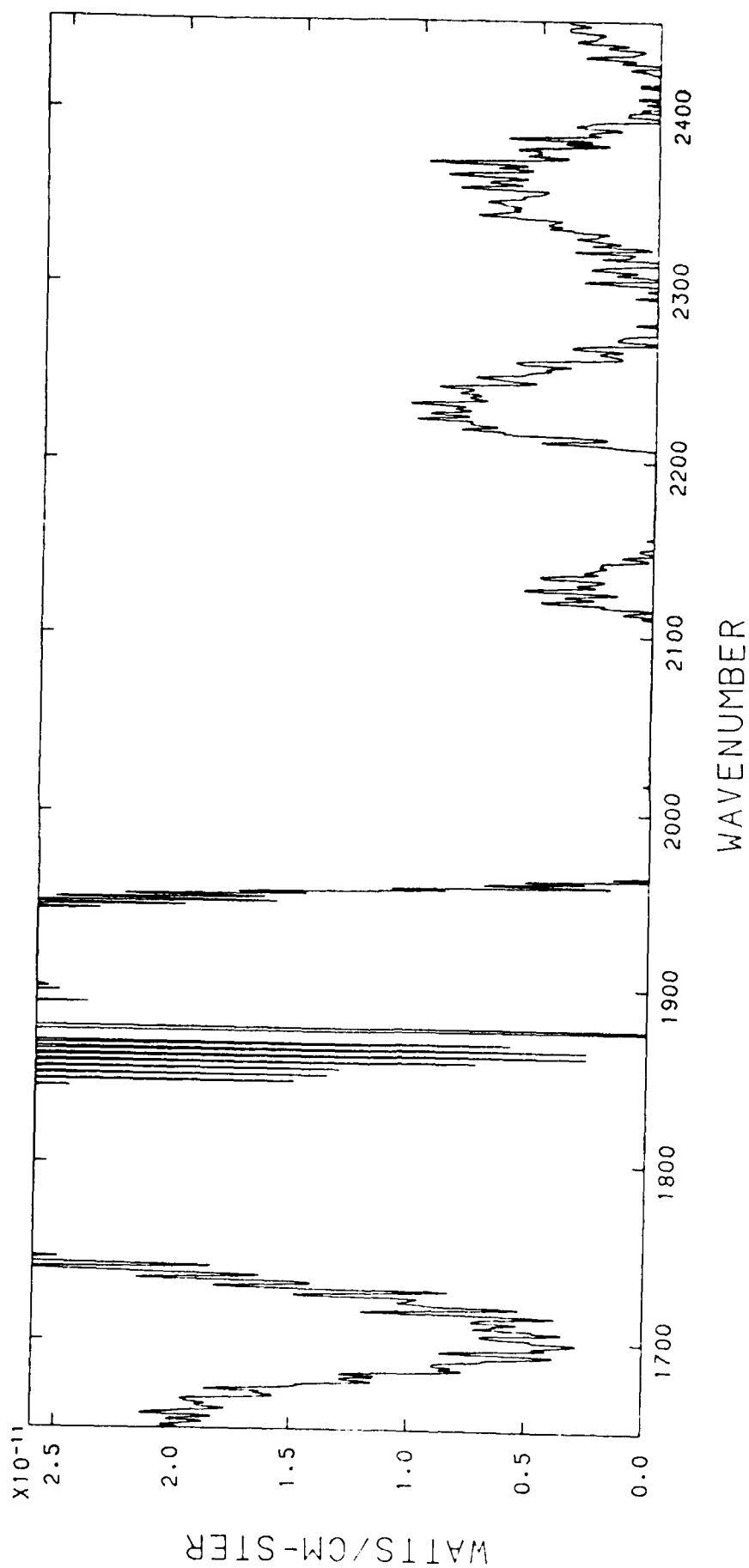
FILE 20, TIME 9: 8:14.324, ALT 112.2-113.4 KM

23-NOV-83 23:04

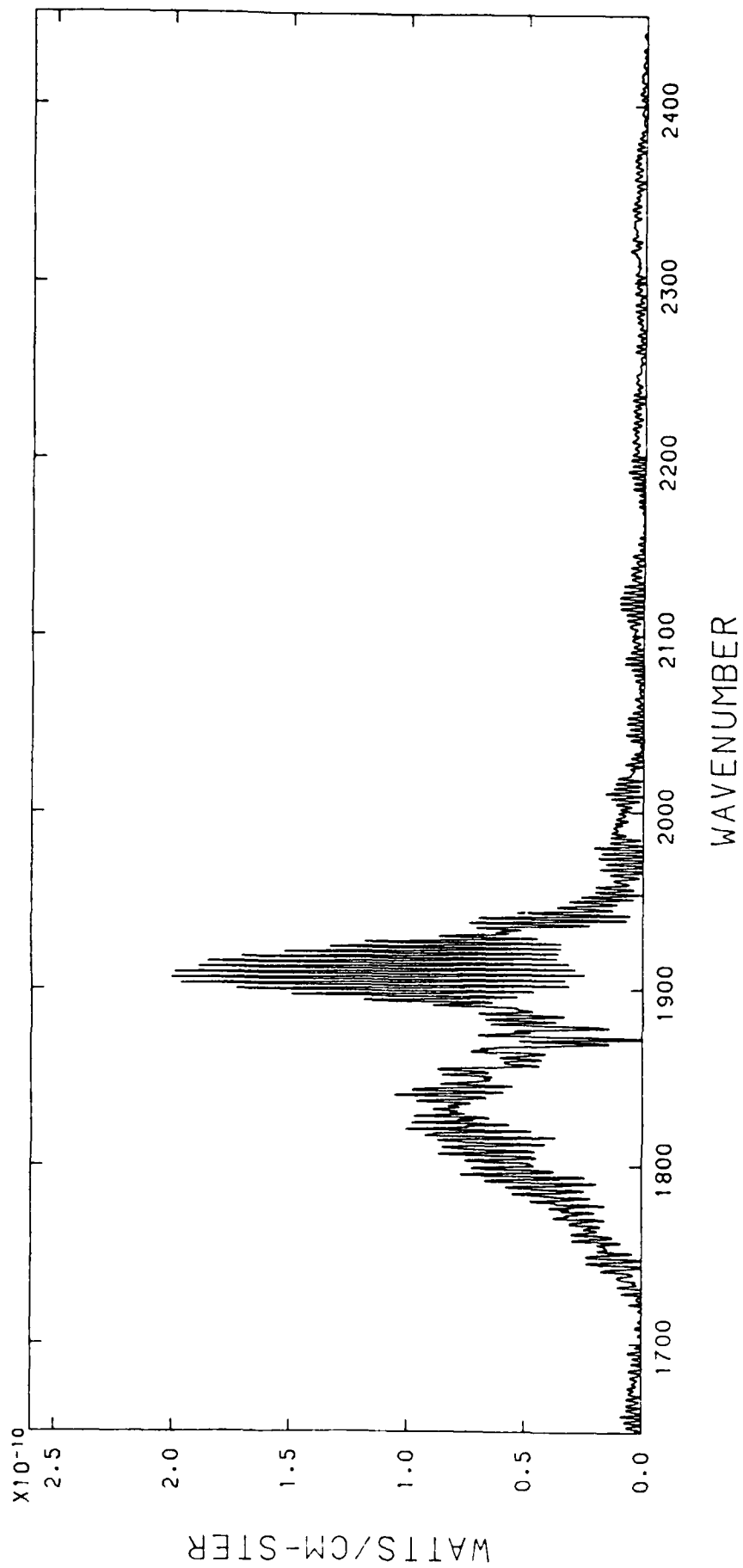


FILE 21, TIME 9: 8:15.924, ALT 113.4-114.5 KM

23-NOV-83 23:05



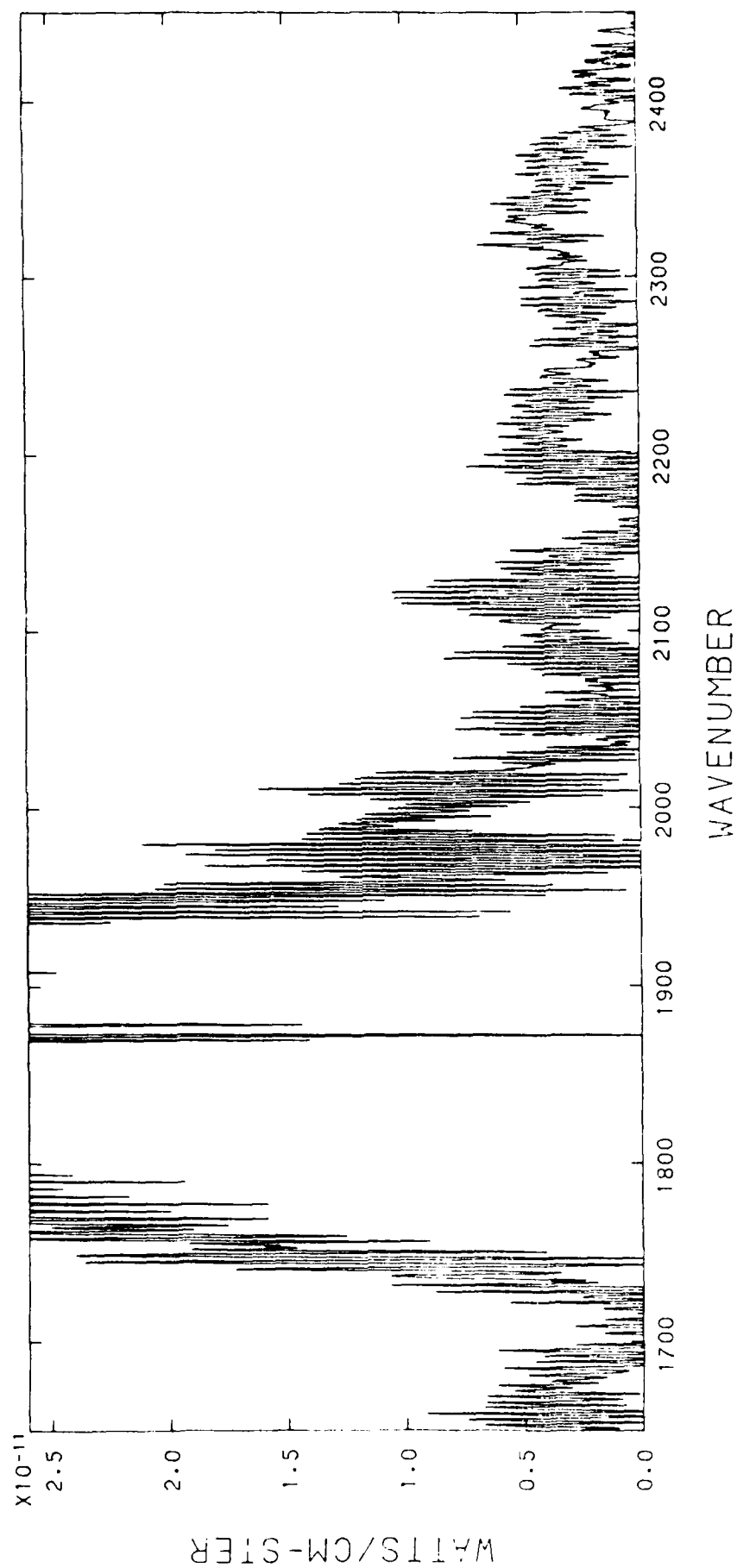
FILE 21, TIME 9: 8:15.924, ALT 113.4-114.5 KM



FILE 22, TIME 9: 8:17.552, ALT 114.5-115.6 KM

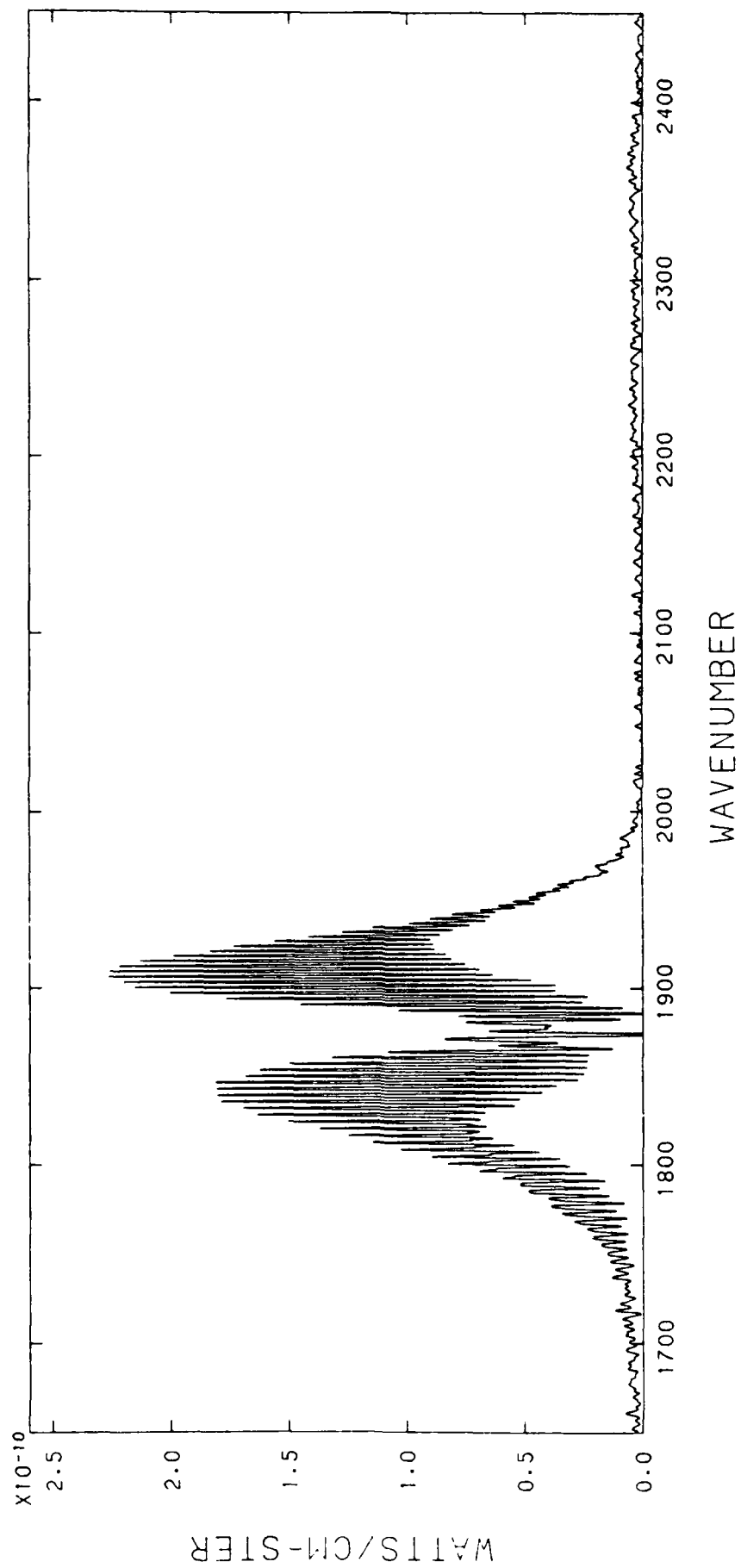
23-NOV-83 23:05





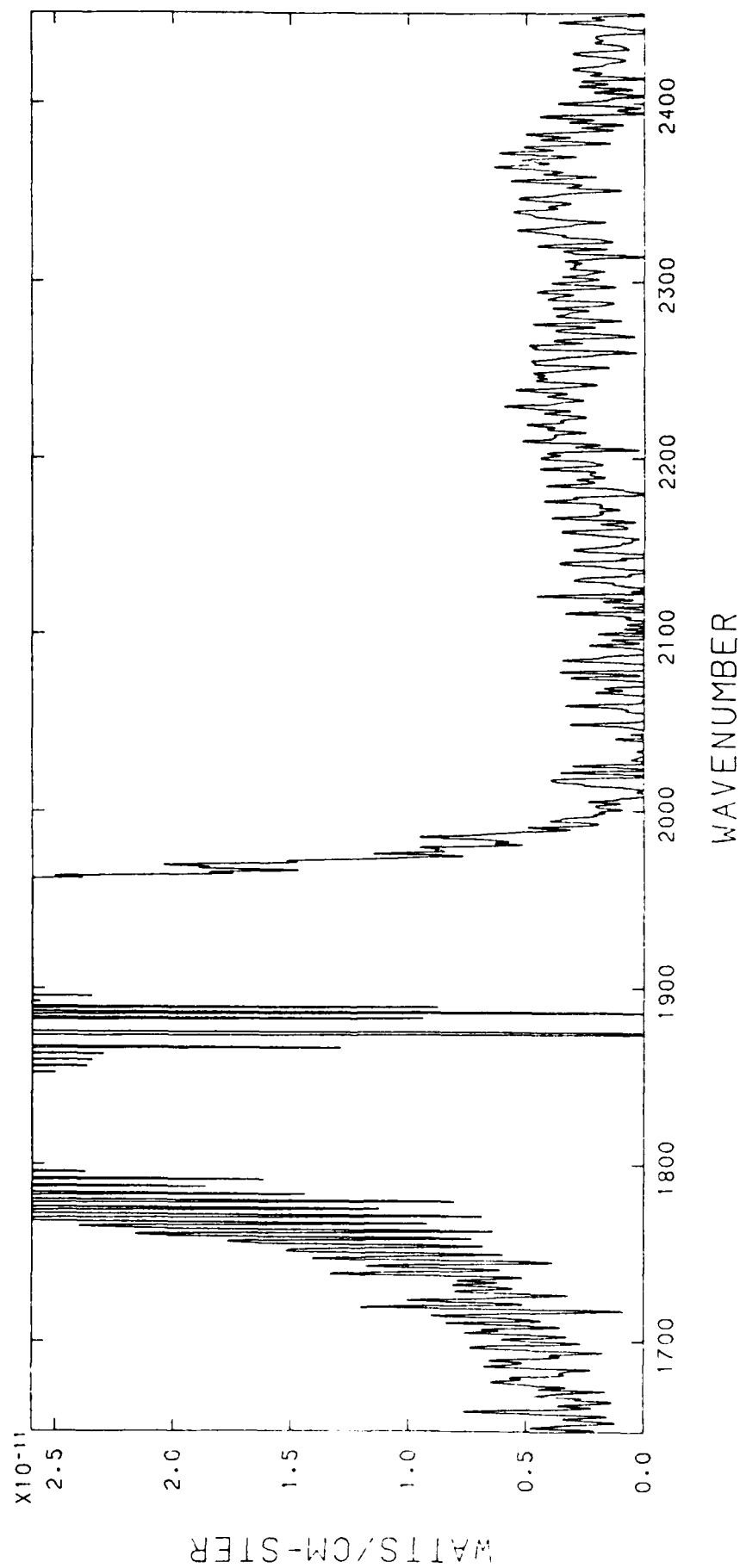
FILE 22, TIME 9: 8:17.552, ALT 114.5-115.6 KM

23-NOV-83 23:05

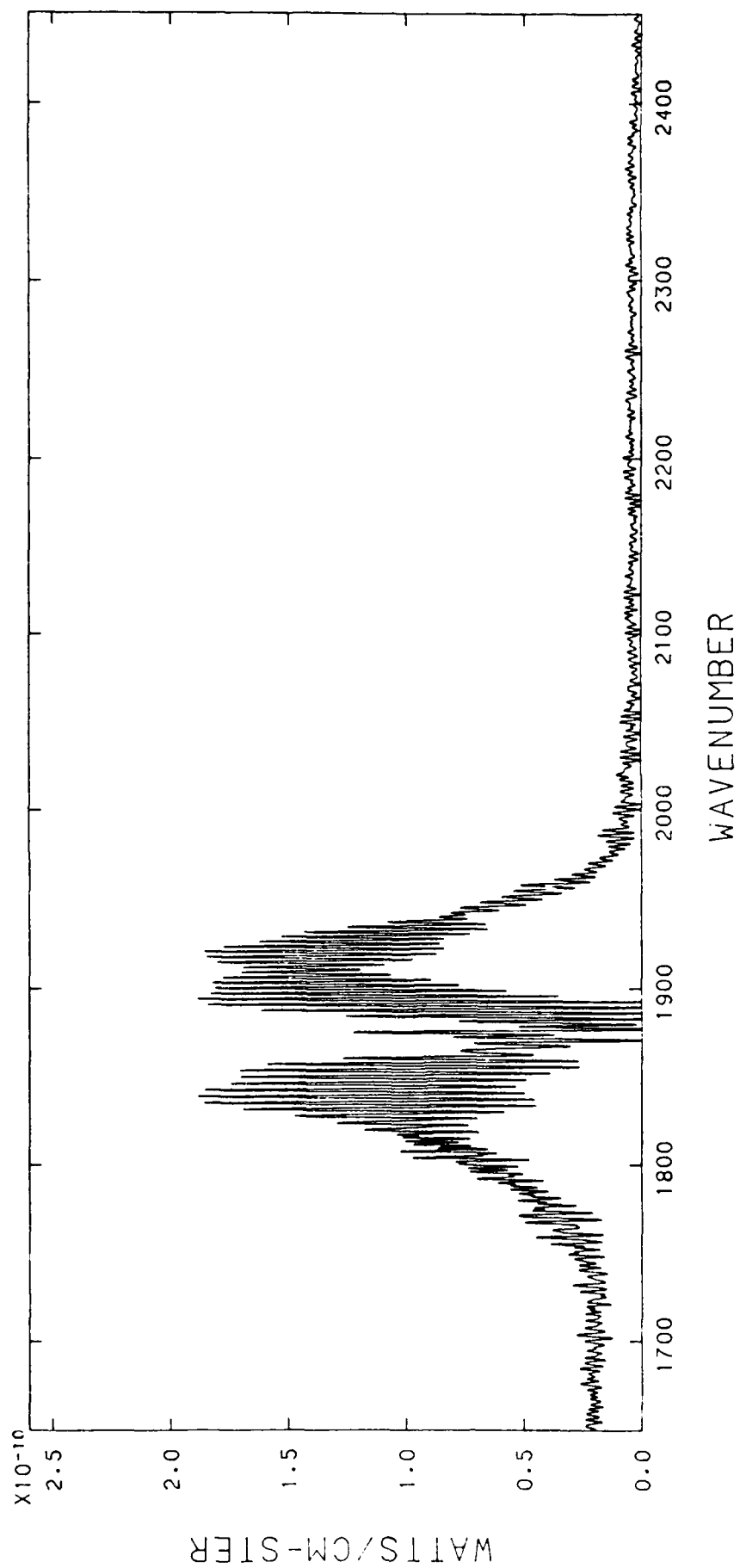


FILE 23, TIME 9: 8:19.178, ALT 115.6-116.6 KM

23-NOV-83 23:05

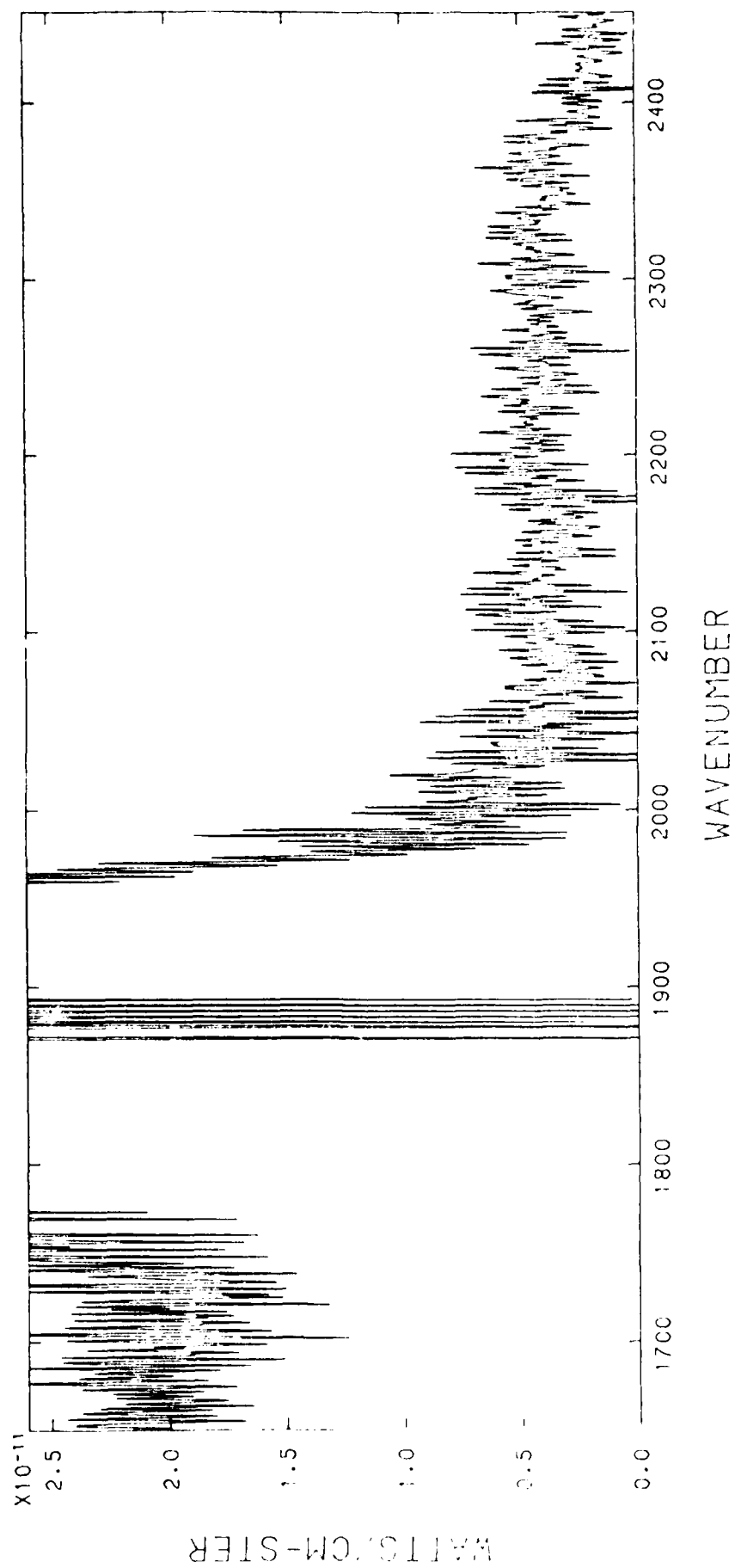


FILE 23, TIME 9: 8:19.178, ALT 115.6-116.6 KM

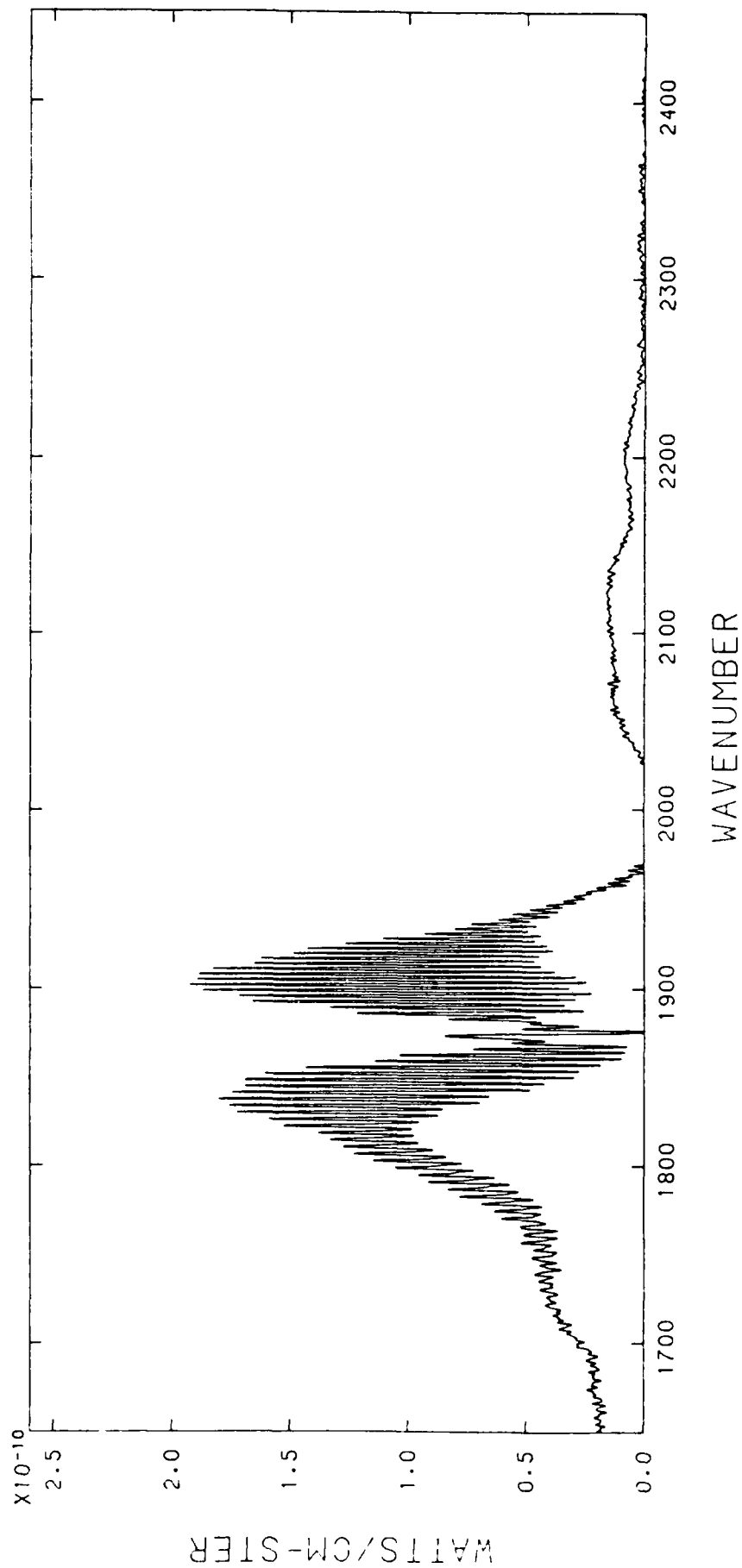


FILE 24, TIME 9: 8:20.808, ALT 116.7-117.7 KM

23-NOV-83 23:05

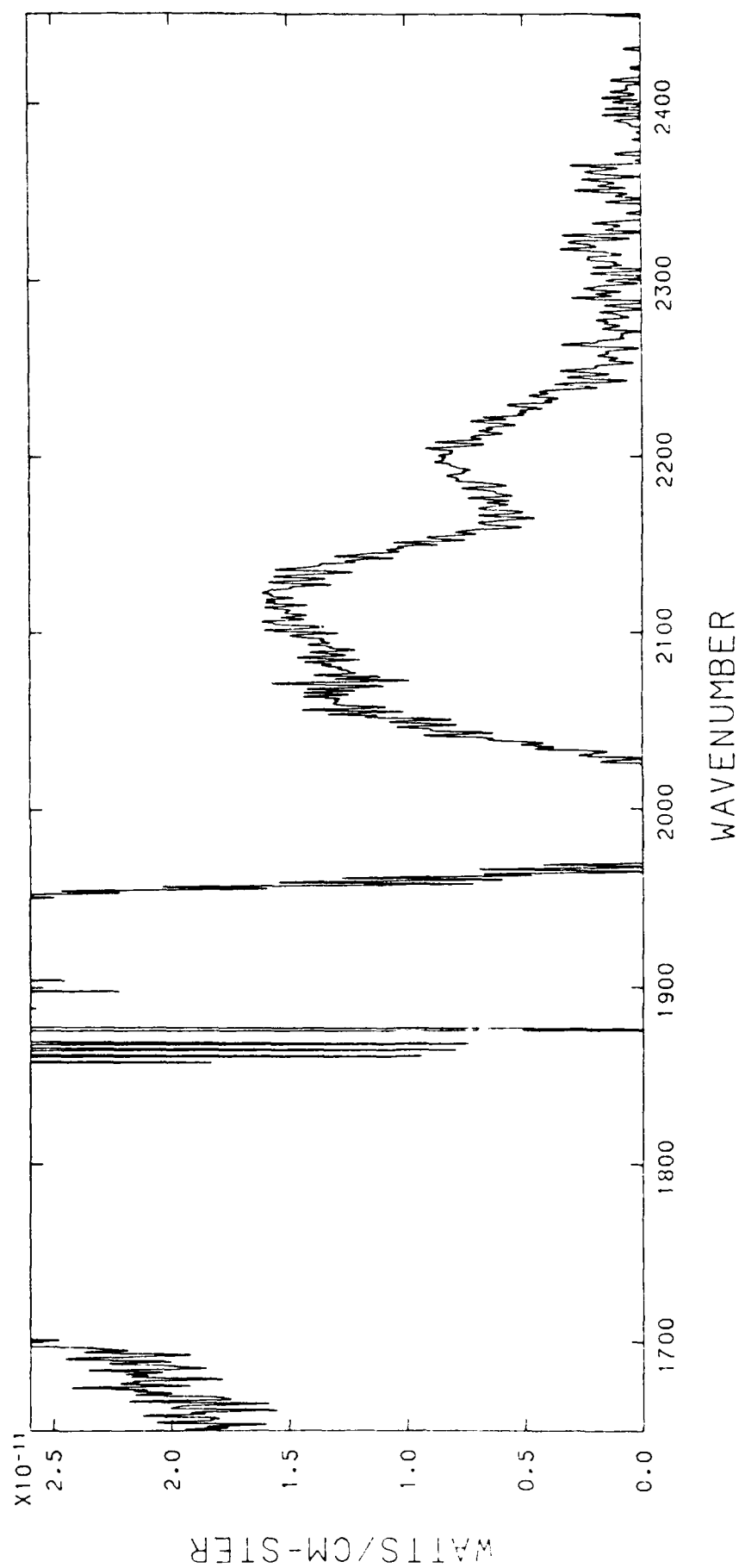


FILE 24, TIME 9: 8:20.808, ALT 116.7-117.7 KM



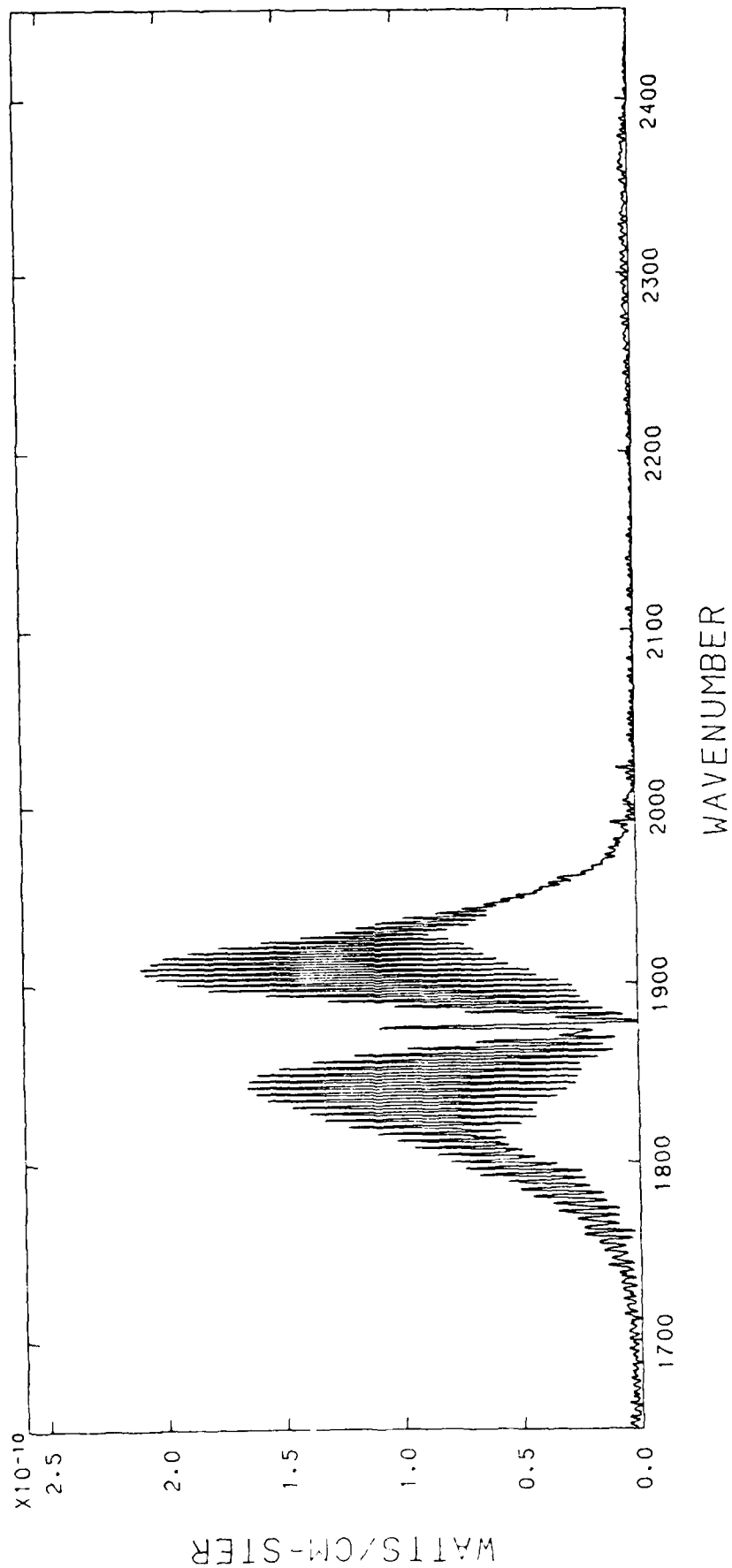
FILE 25, TIME 9: 8:22.436, ALT 117.7-118.7 KM

23-NOV-83 23:06



FILE 25, TIME 9: 8:22.436, ALT 117.7-118.7 KM

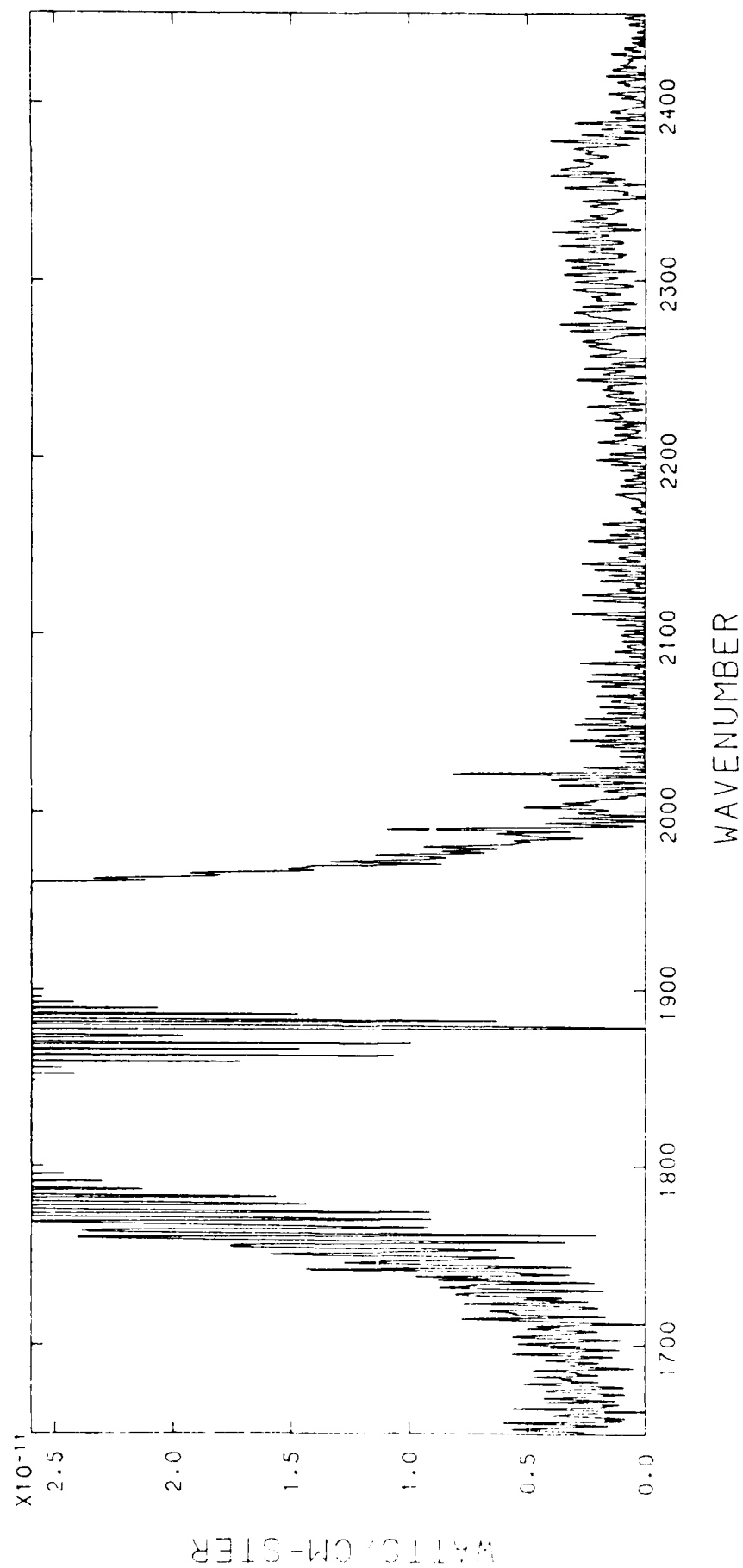
23-NOV-83 23:06



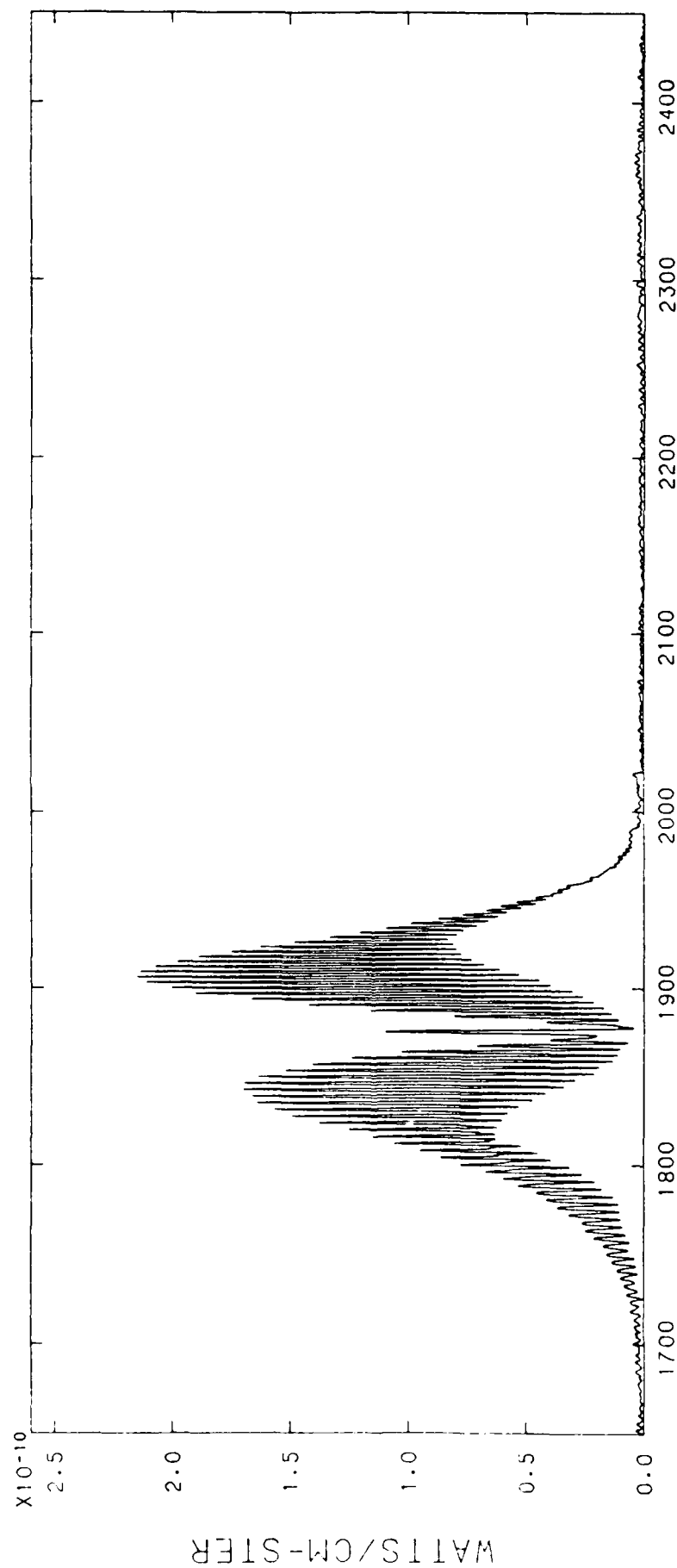
FILE 26. TIME 9: 8:24. 64, ALT 118.7-119.7 KM

23-NOV-83 23:06





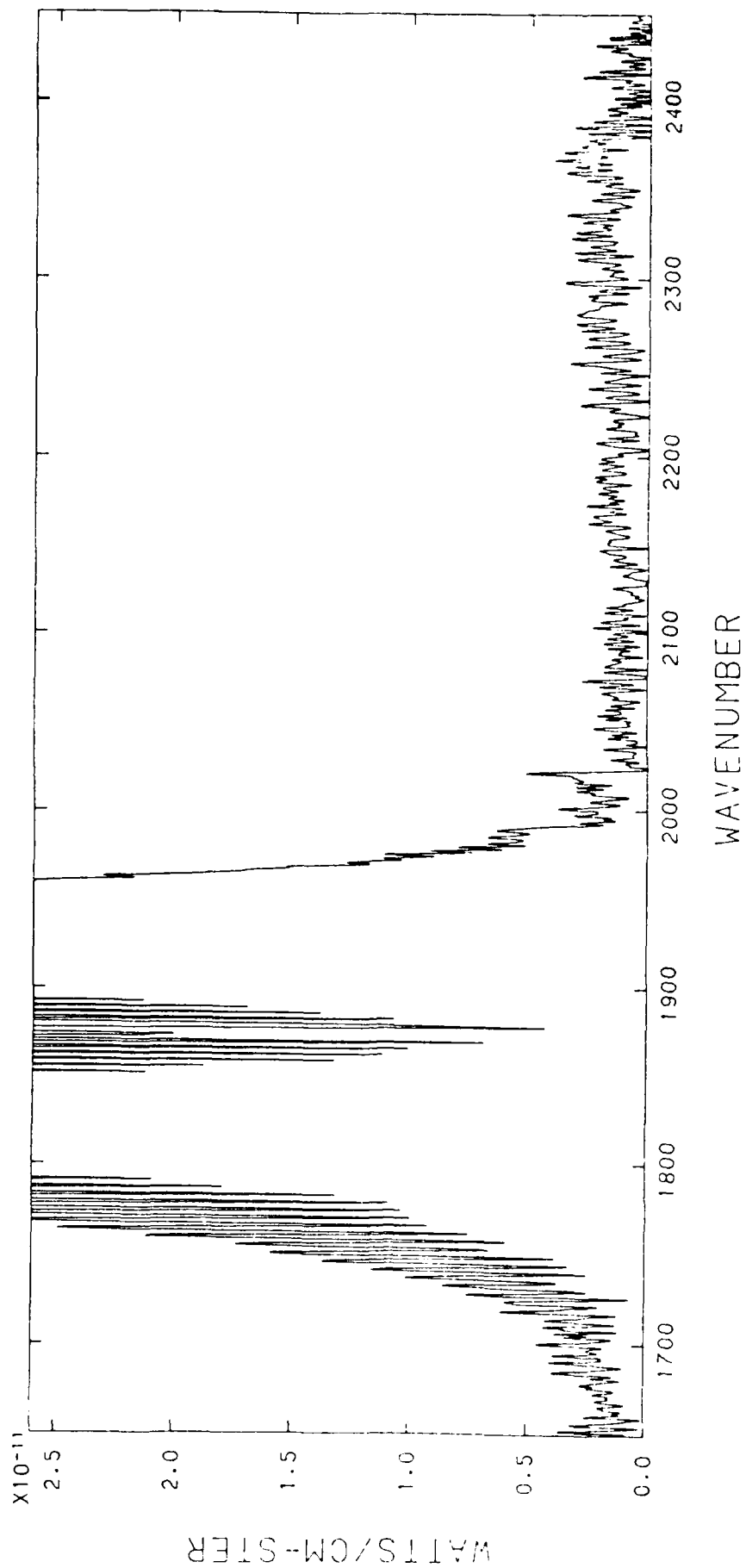
FILE 26, TIME 9: 8:24. 64. ALT 118.7-119.7 KM



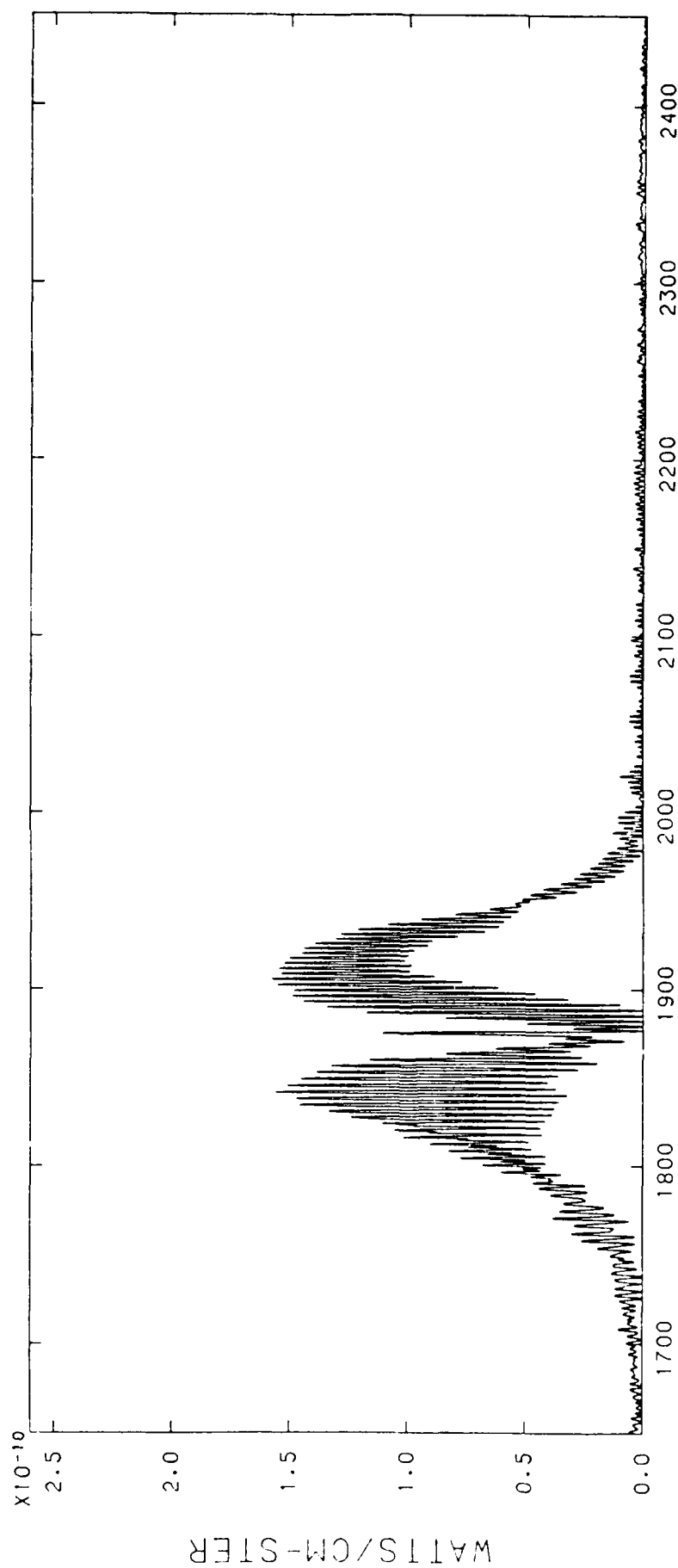
WAVENUMBER

FILE 27, TIME 9: 8:25.692, ALT 119.7-120.7 KM

23-NOV-83 23:06



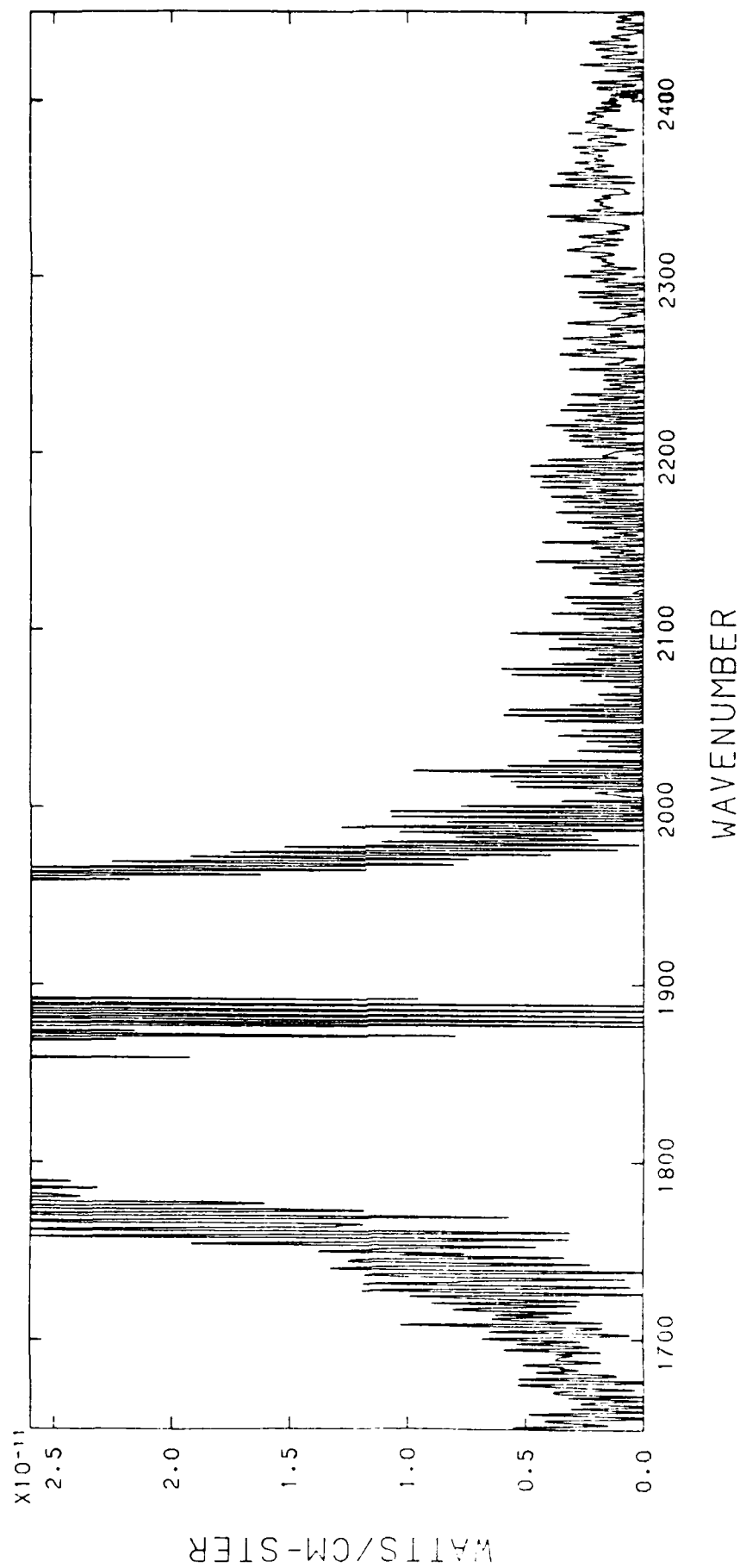
FILE 27, TIME 9: 8:25.692, ALT 119.7-120.7 KM



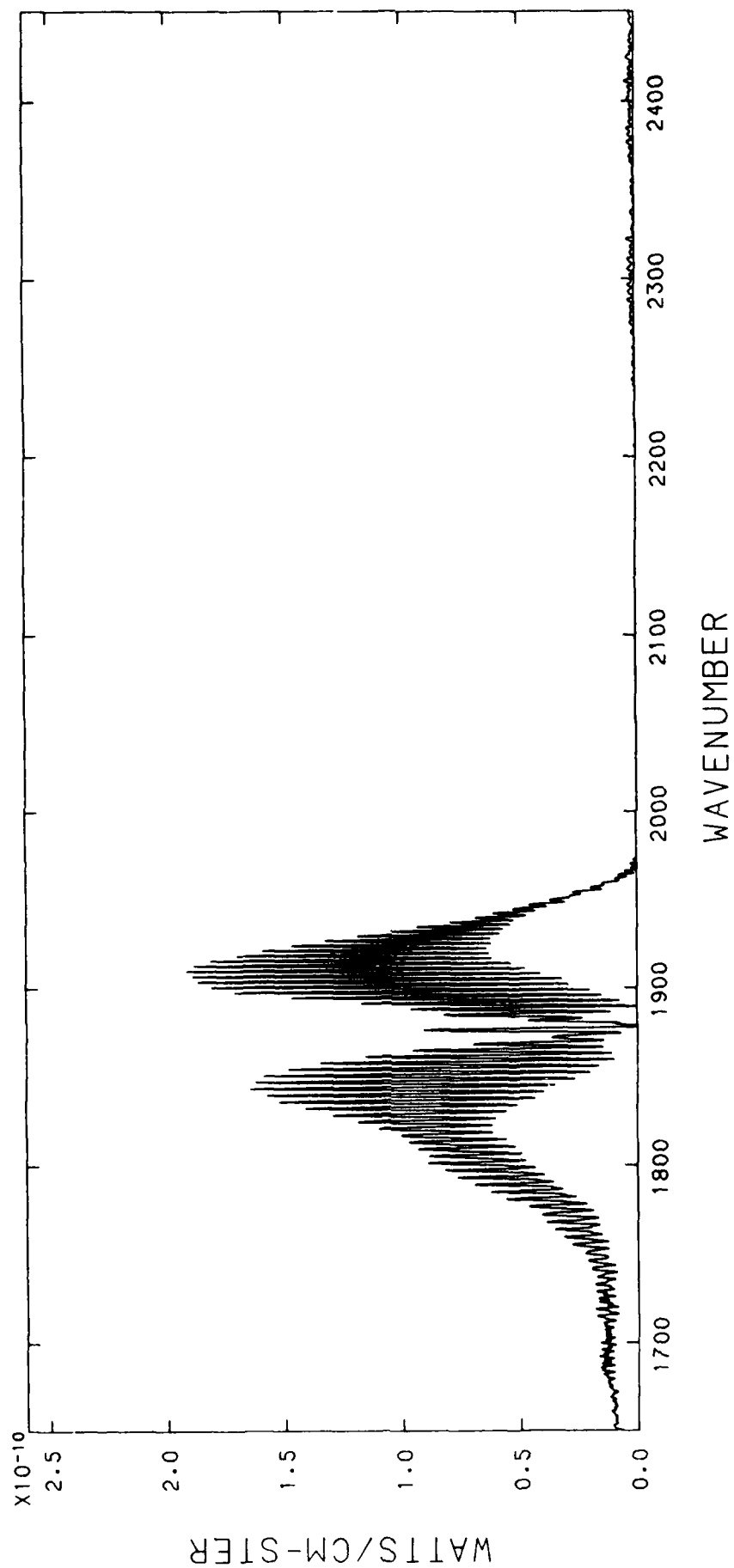
WAVENUMBER

FILE 28, TIME 9: 8:27.320, ALT 120.7-121.7 KM

23-NOV-83 23.06

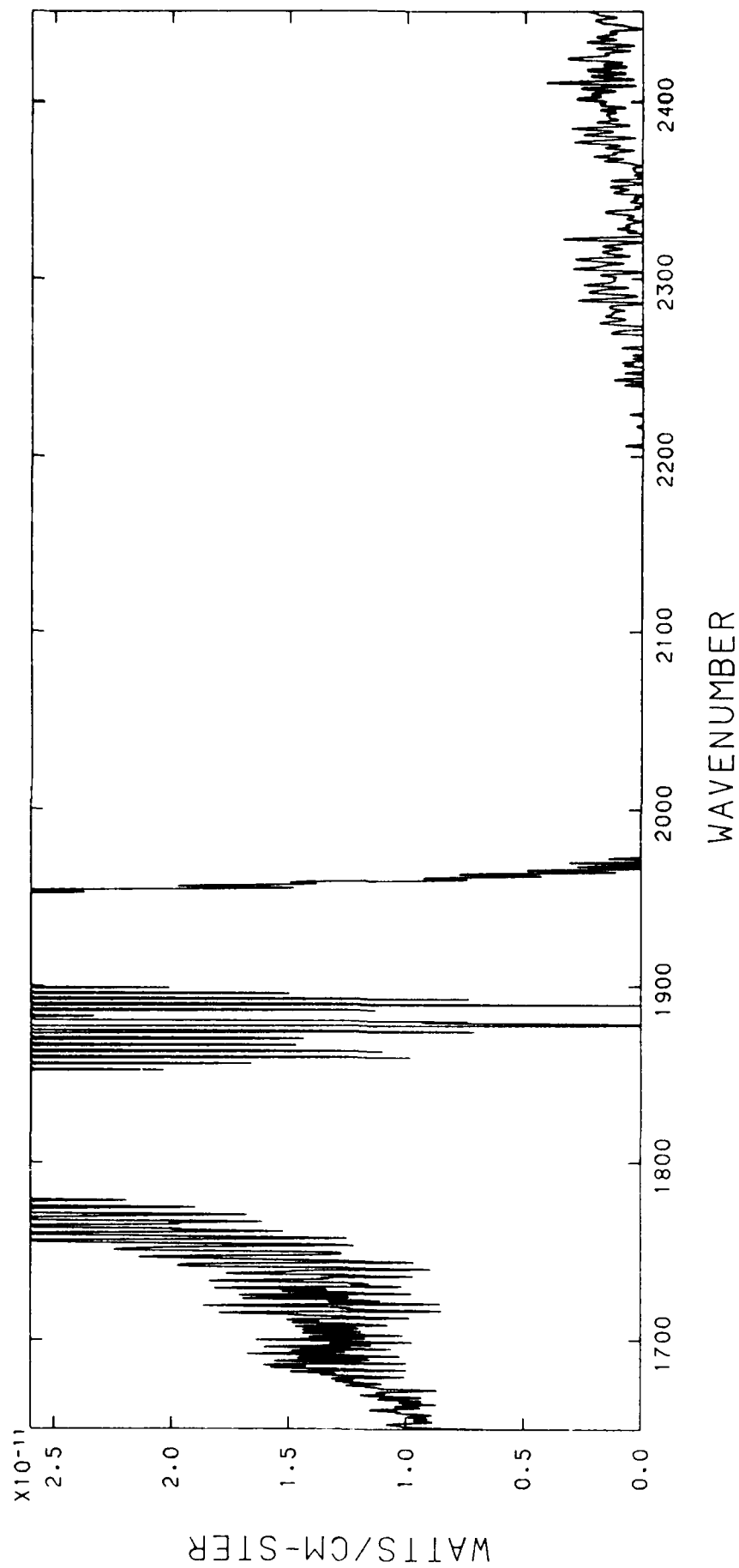


FILE 28, TIME 9: 8:27.320, ALT 120.7-121.7 KM

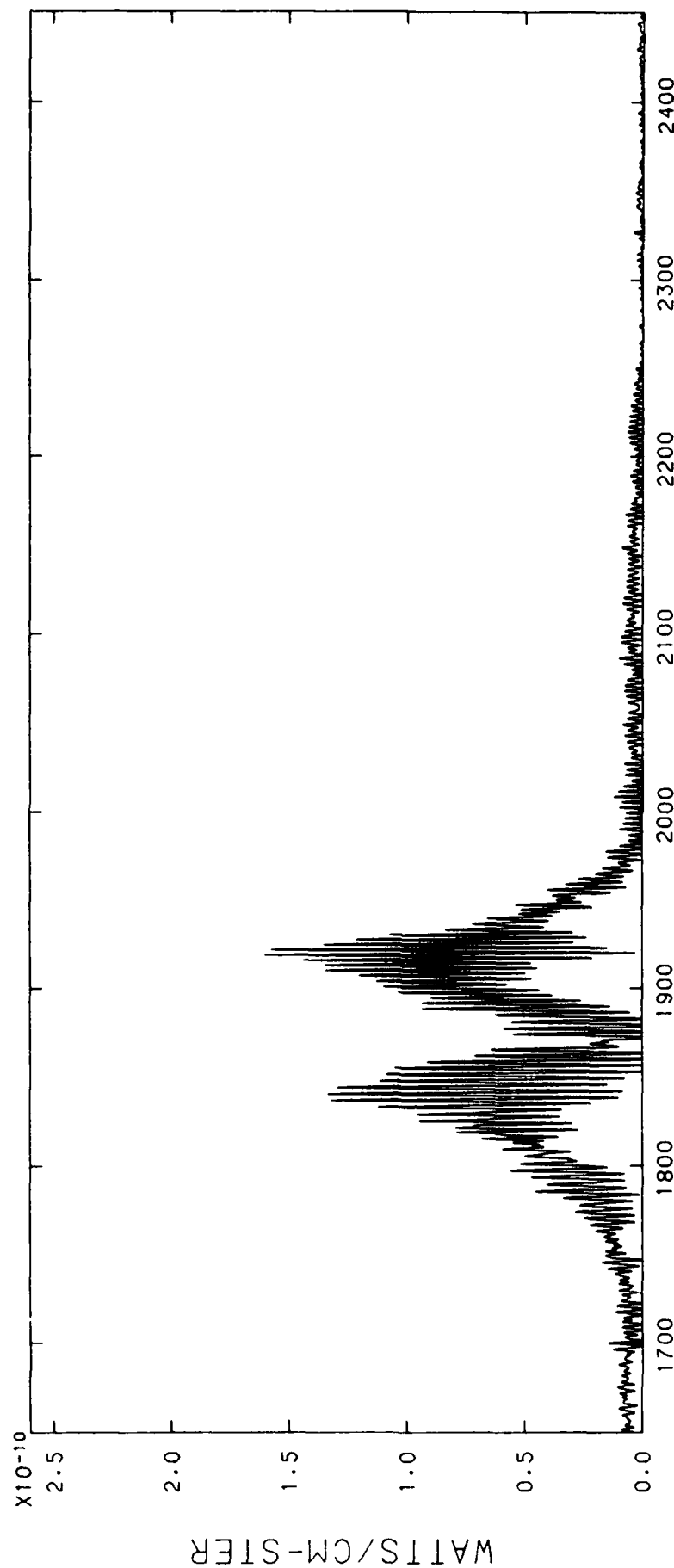


FILE 29, TIME 9: 8:28.946, ALT 121.7-122.6 KM

23-NOV-83 23:06



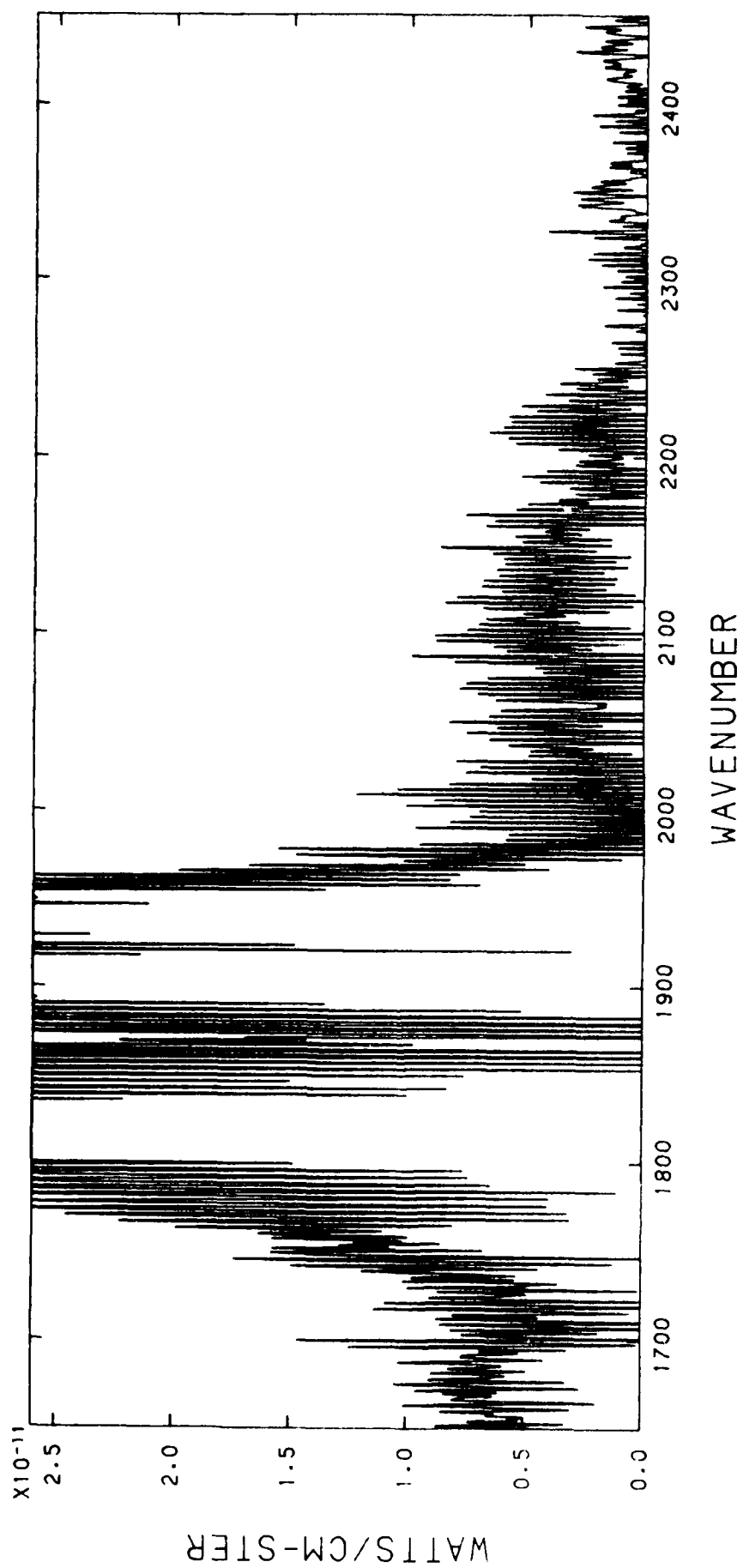
FILE 29. TIME 9: 8:28.946, ALT 121.7-122.6 KM



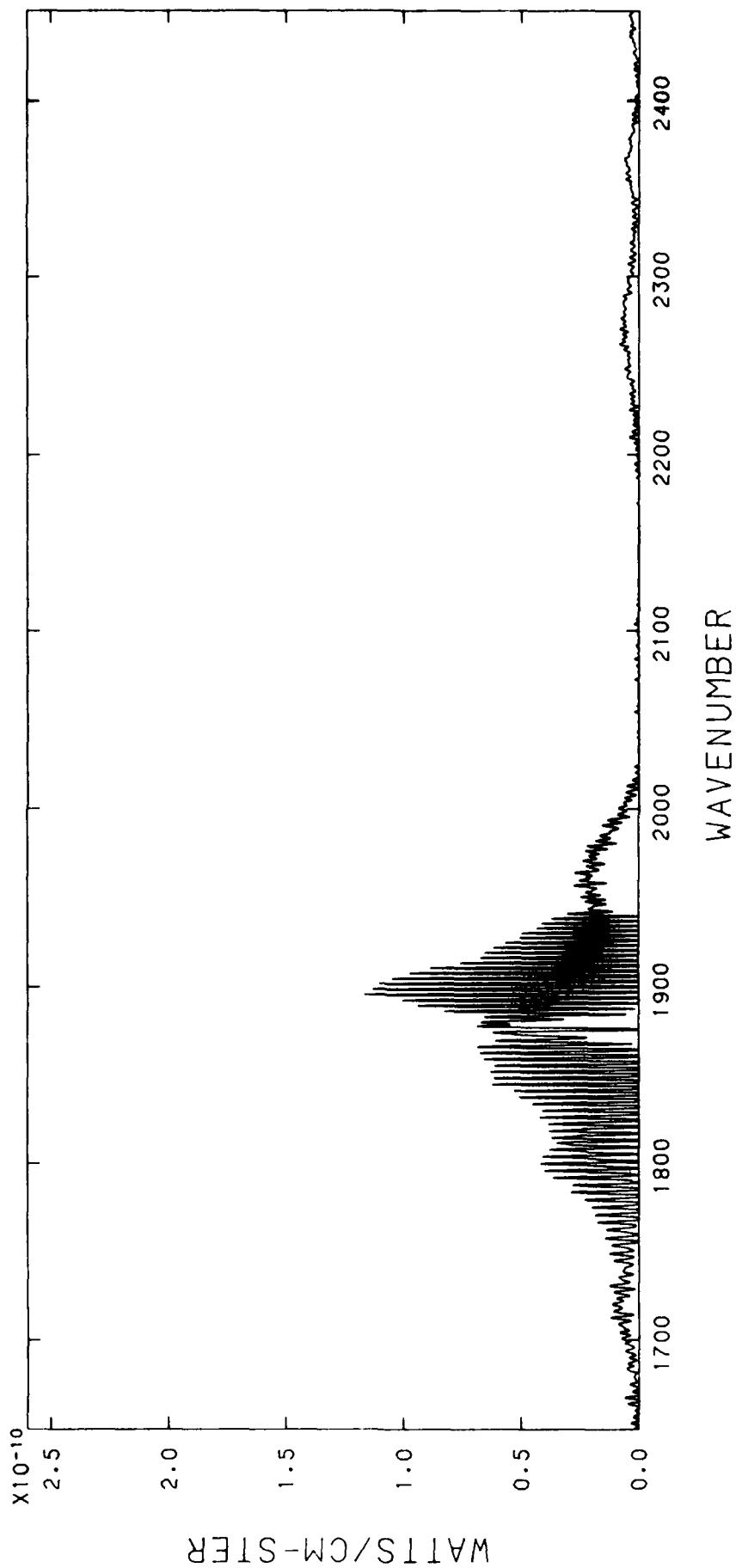
FILE 30, TIME 9: 8:30.574, ALT 122.6-123.5 KM

23-NOV-83 23:06



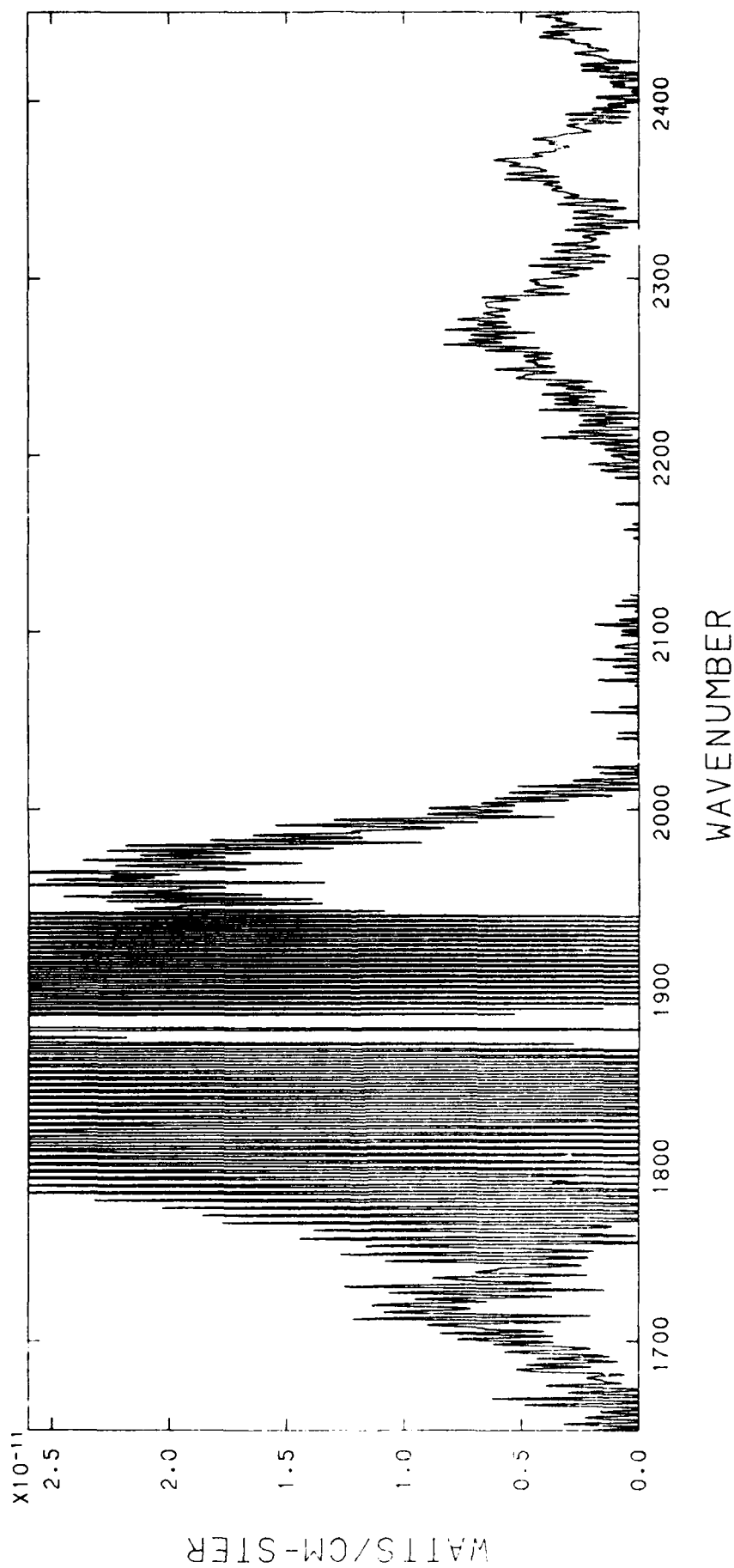


FILE 30, TIME 9: 8:30.574, ALT 122.6-123.5 KM



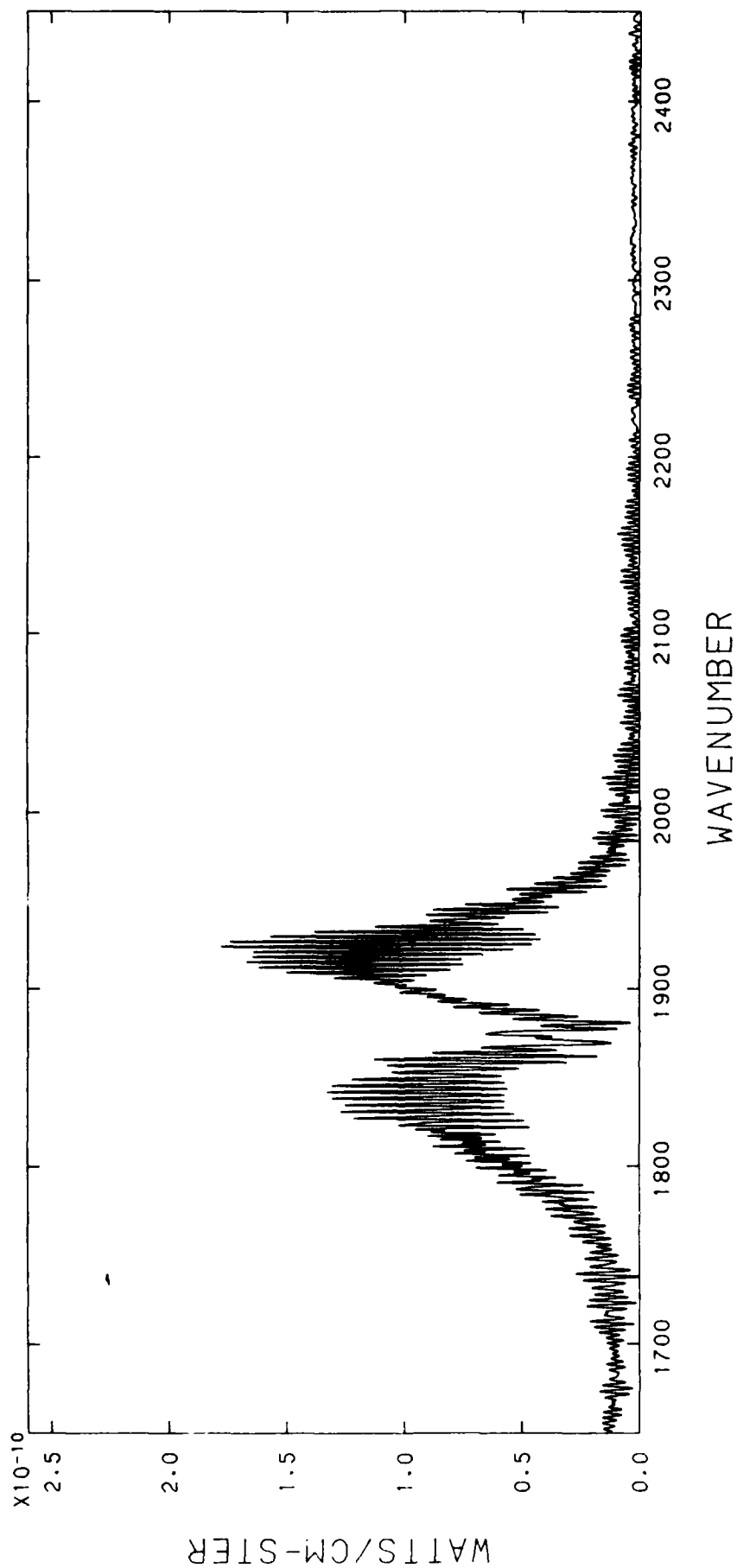
FILE 31, TIME 9: 8:32.206, ALT 123.5-124.4 KM

23-NOV-83 23:06



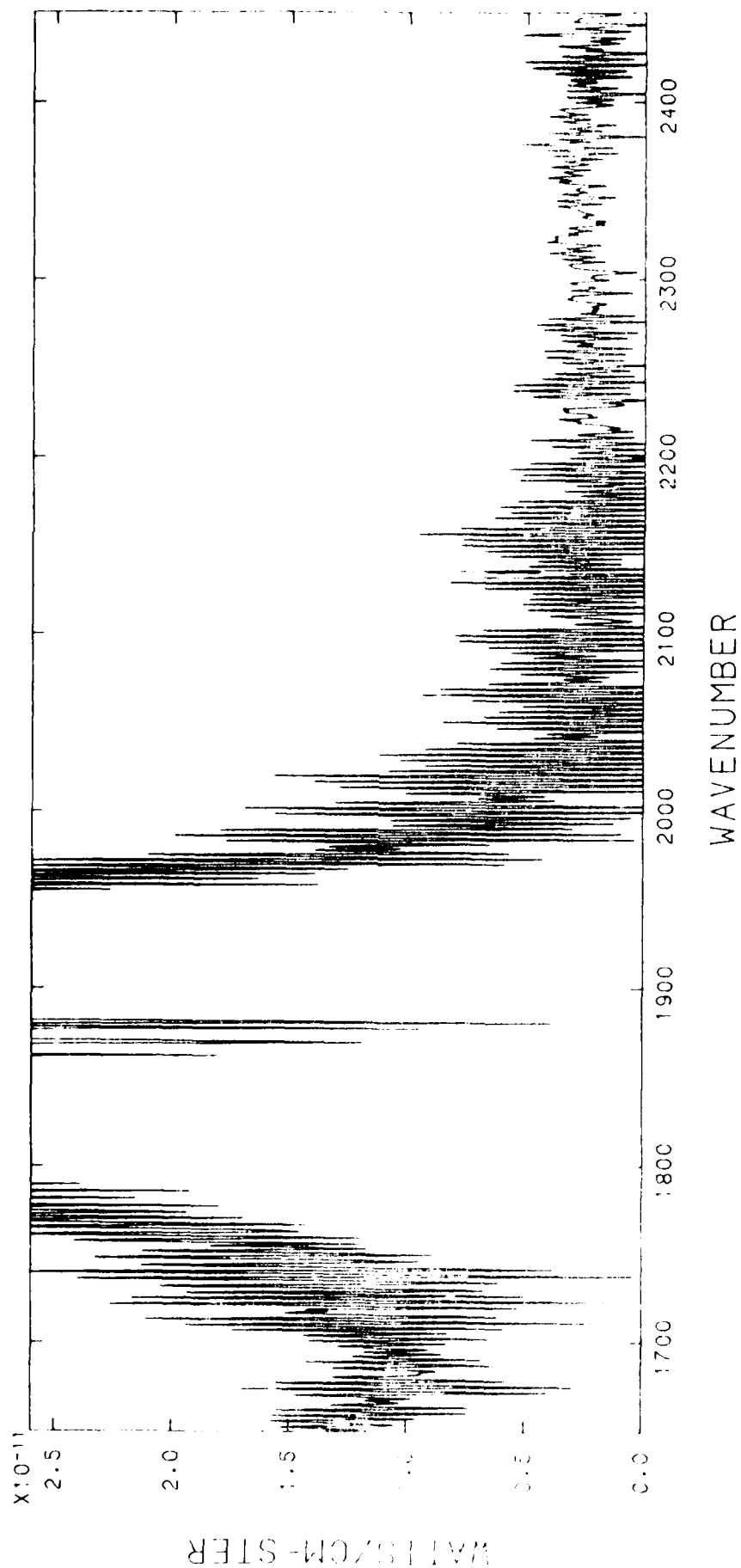
FILE 31, TIME 9: 8:32.206, ALT 123.5-124.4 KM

23-NOV-83 23:06



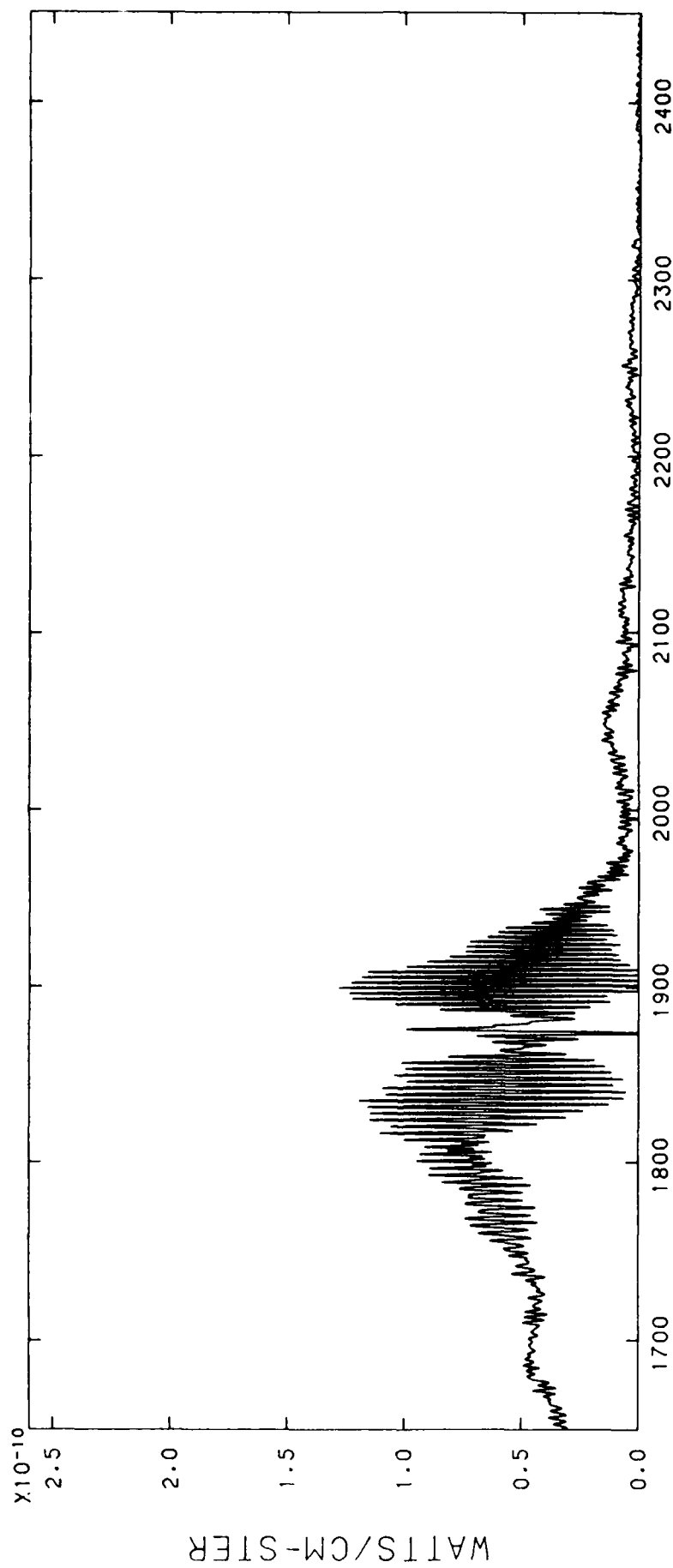
FILE 32, TIME 9: 8:33.838, ALT 124.4-125.2 KM

23-NOV-83 23:06



FILE 32, TIME 9: 8:33.838, ALT 124.4-125.2 KM

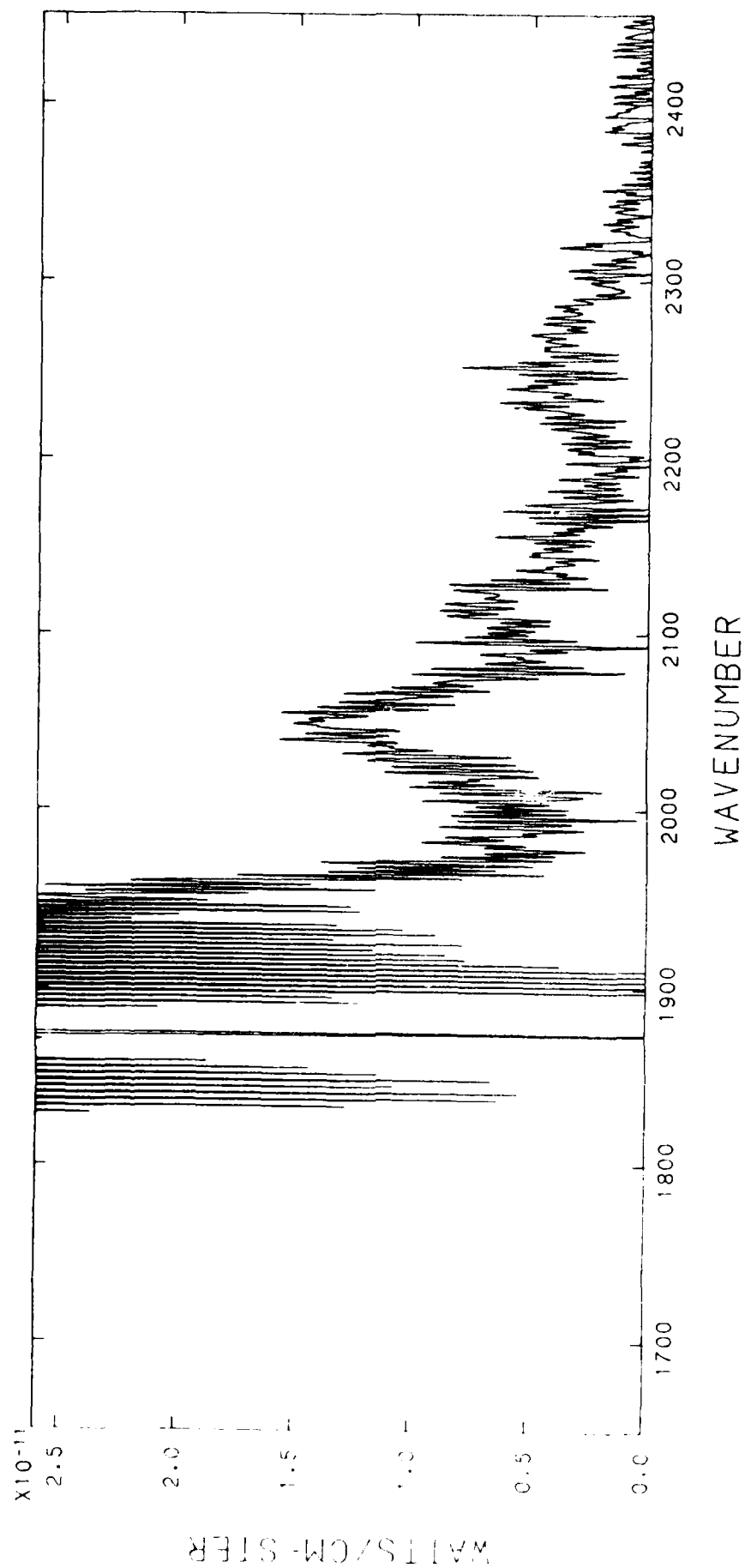
23-NOV-83 23:07



WAVENUMBER

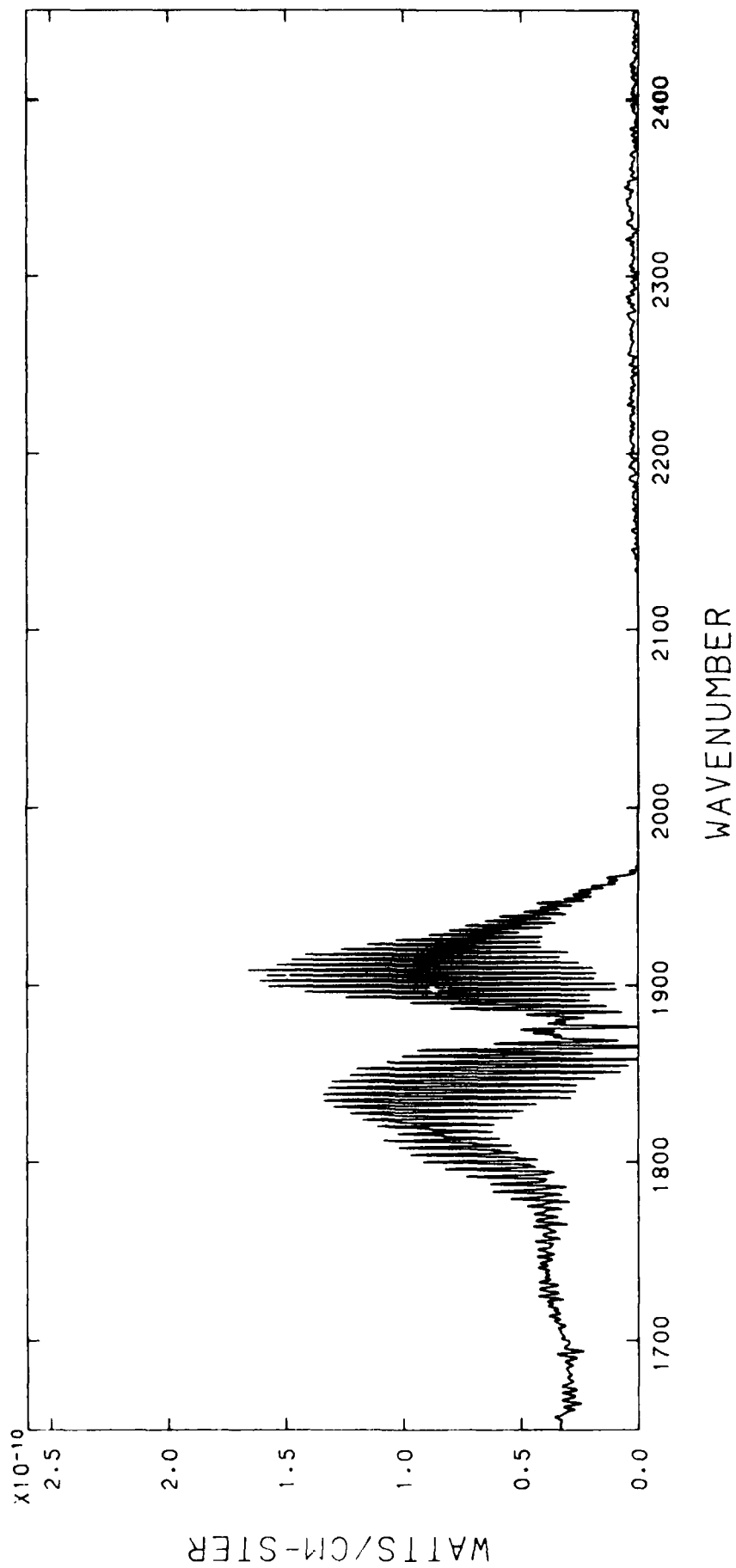
FILE 33, TIME 9: 8:35.466, ALT 125.2-126.0 KM

23-NOV-83 23:07



FILE 33, TIME 9: 8:35.466, ALT 125.2-126.0 KM

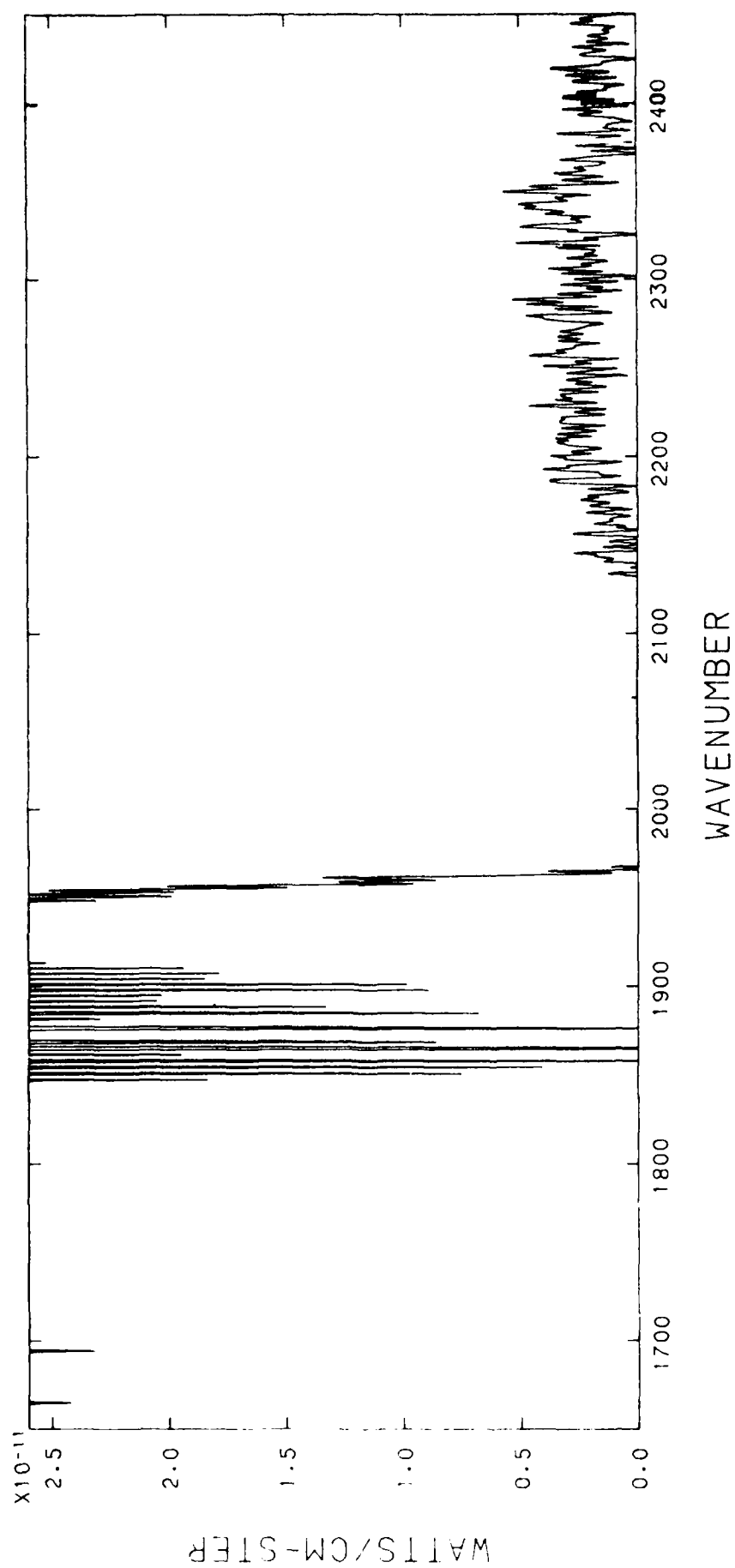
23-NOV-83 23:07



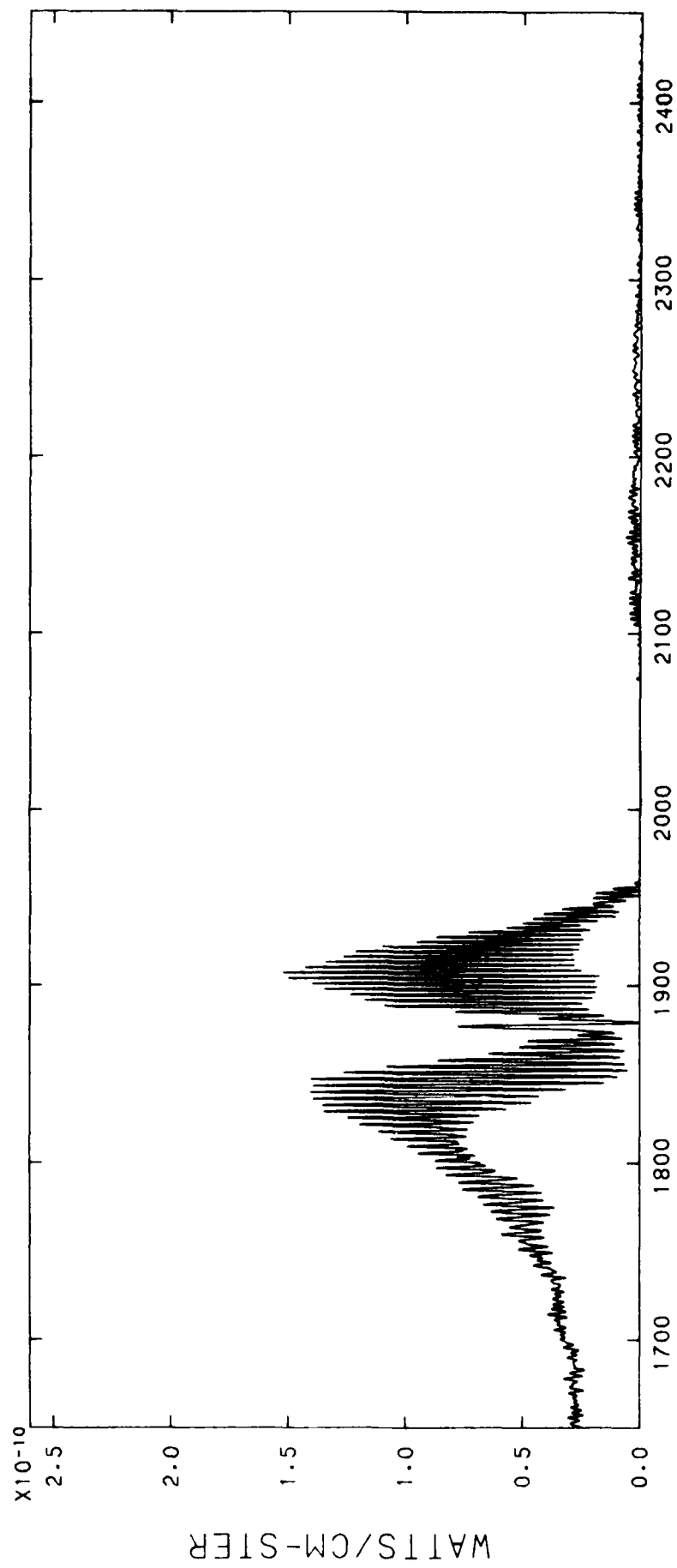
FILE 34. TIME 9: 8:37. 94. ALT 126.0-126.8 KM

23-NOV-83 23.07





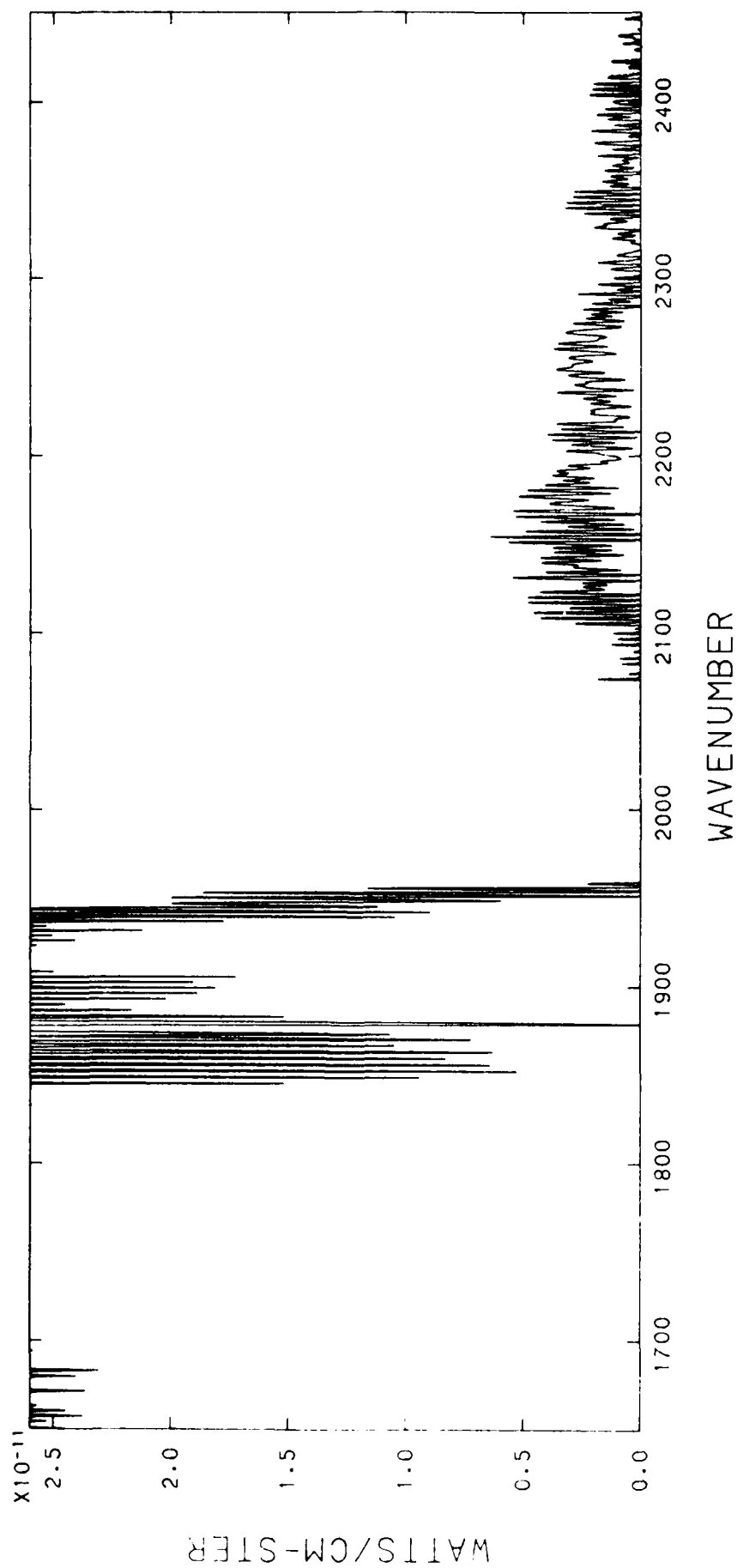
FILE 34, TIME 9: 8:37. 94, ALT 126.0-126.8 KM



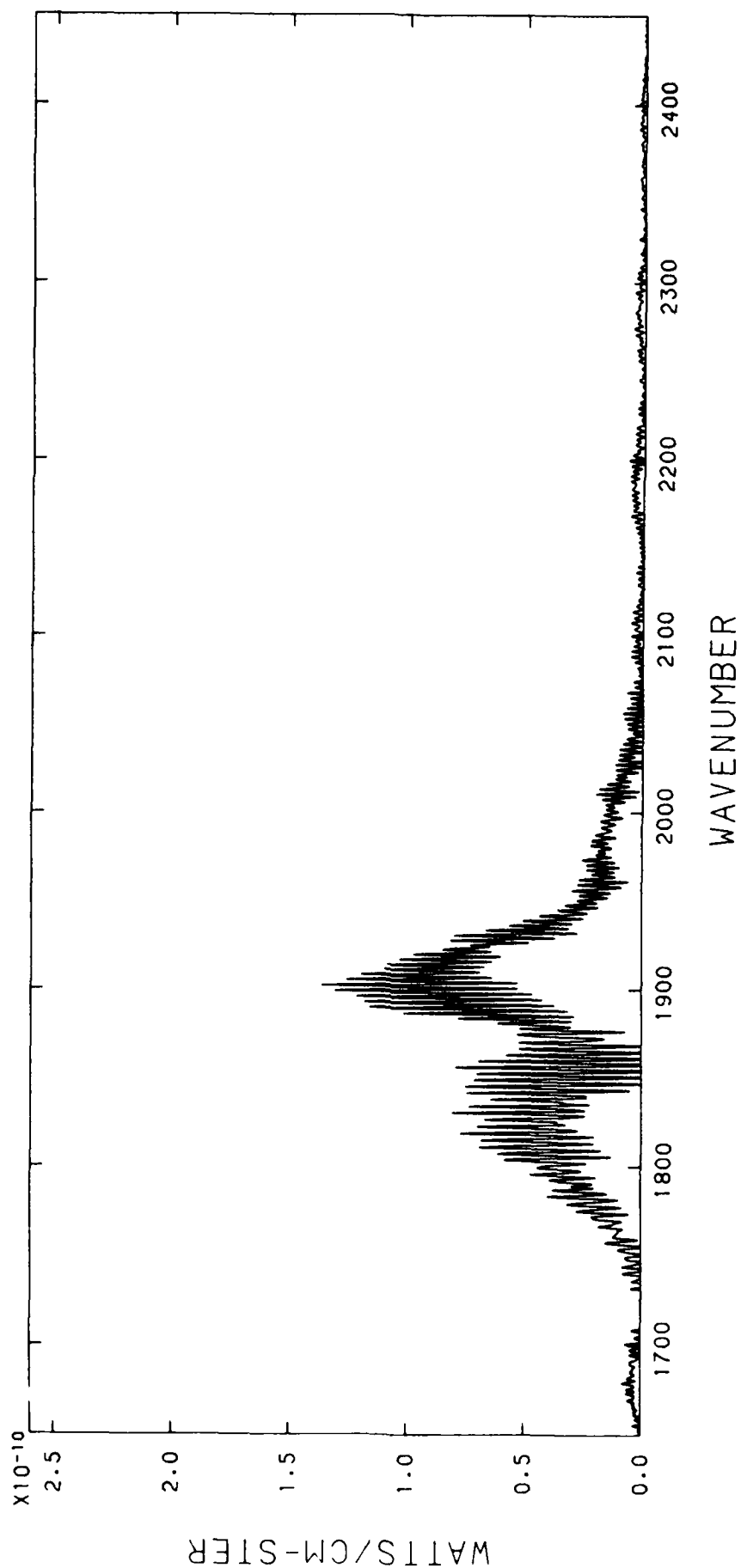
WAVENUMBER

FILE 35, TIME 9: 8:38.722, ALT 126.8-127.6 KM

23-NOV-83 23:07

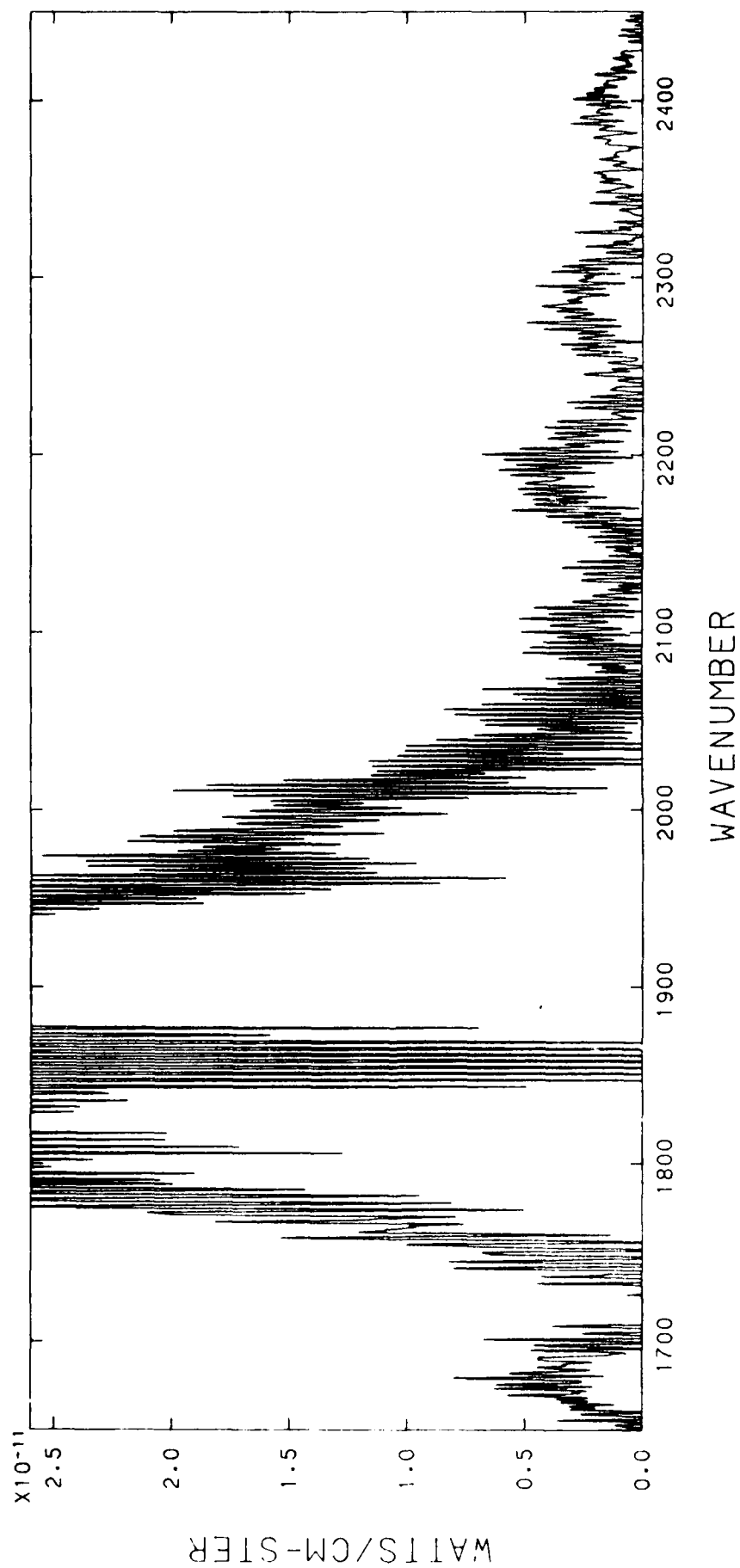


FILE 35, TIME 9: 8:38.722, ALT 126.8-127.6 KM



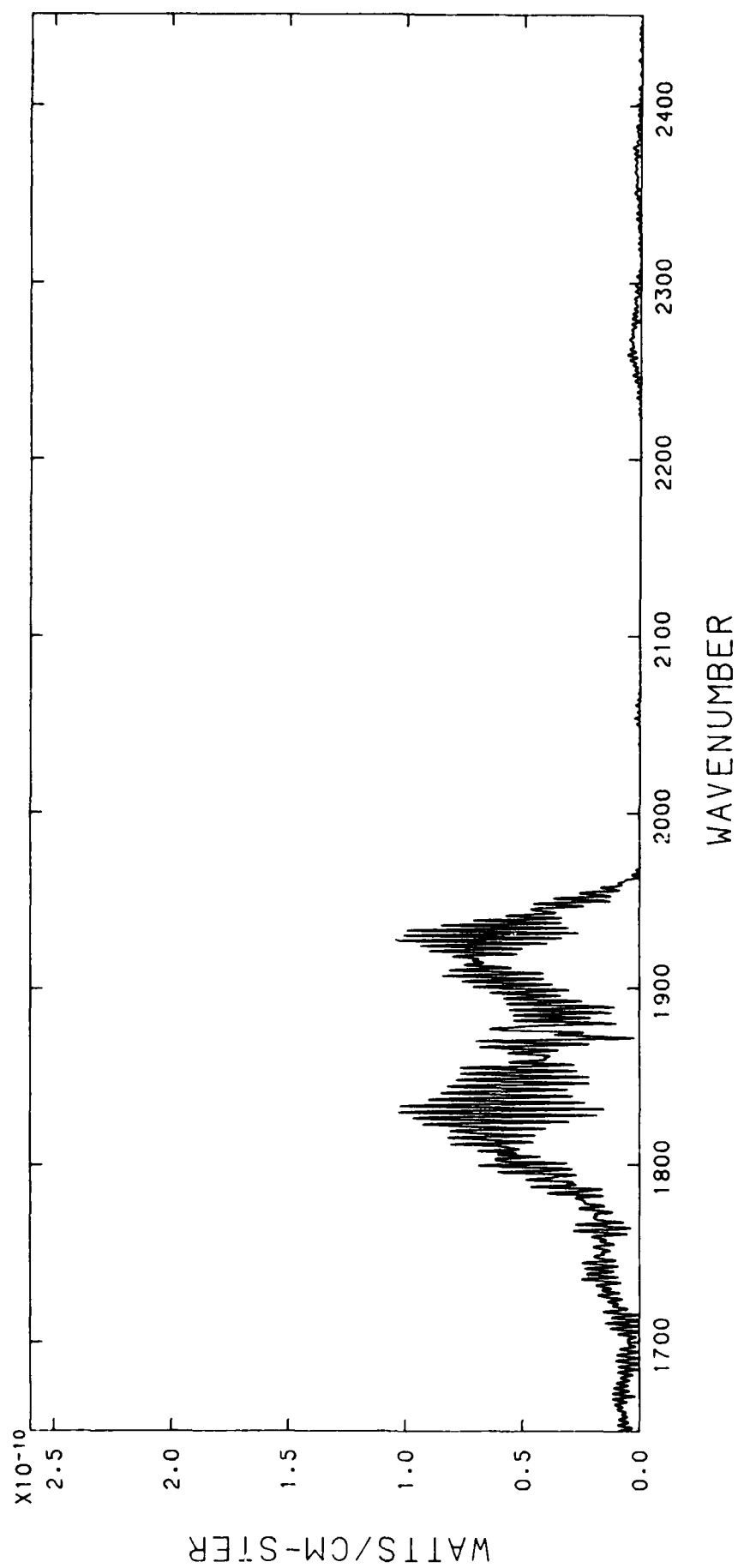
FILE 36, TIME 9: 8:40.350, ALT 127.6-128.4 KM

23-NOV-83 23:08



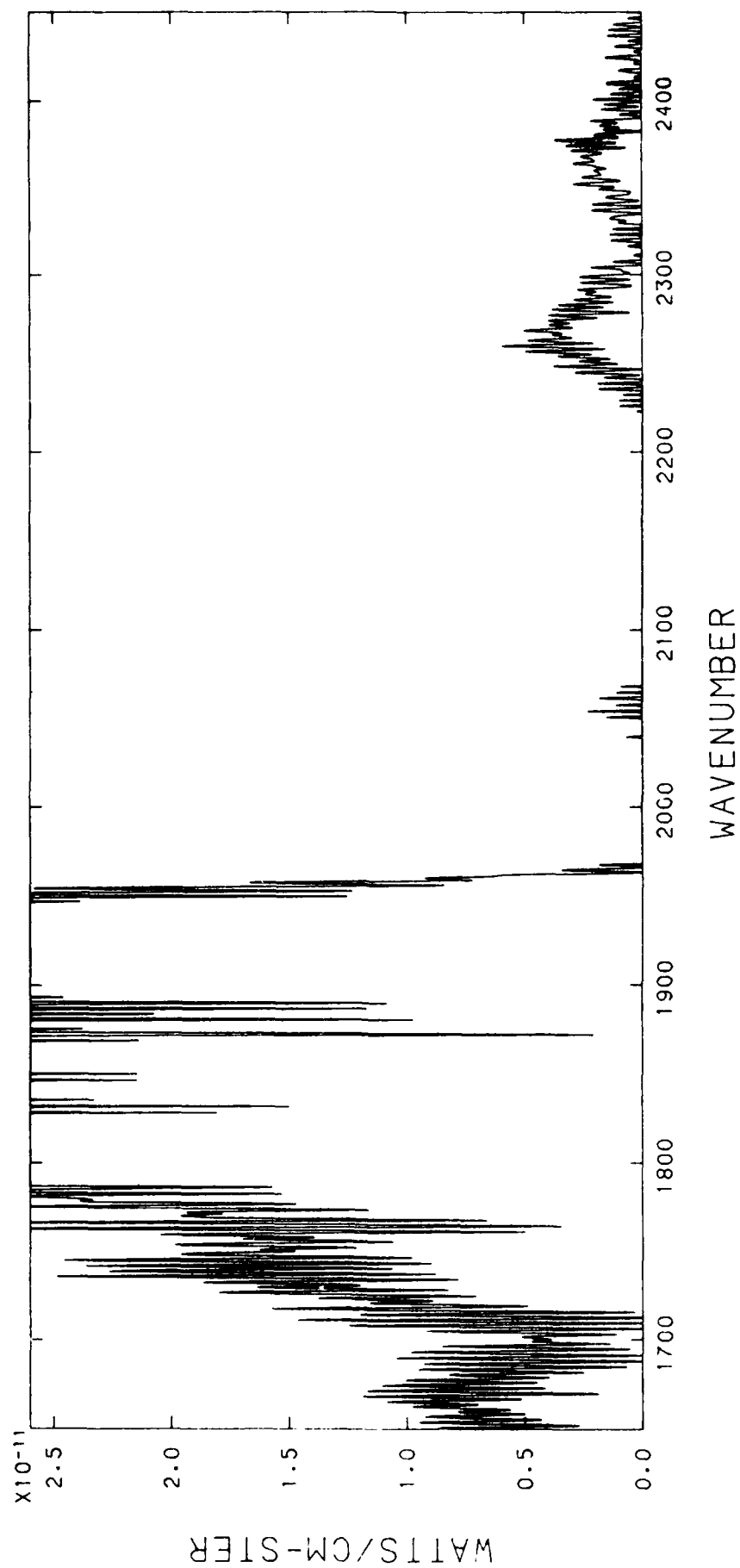
FILE 36, TIME 9: 8:40.350, ALT 127.6-128.4 KM

23-NOV-83 23:08



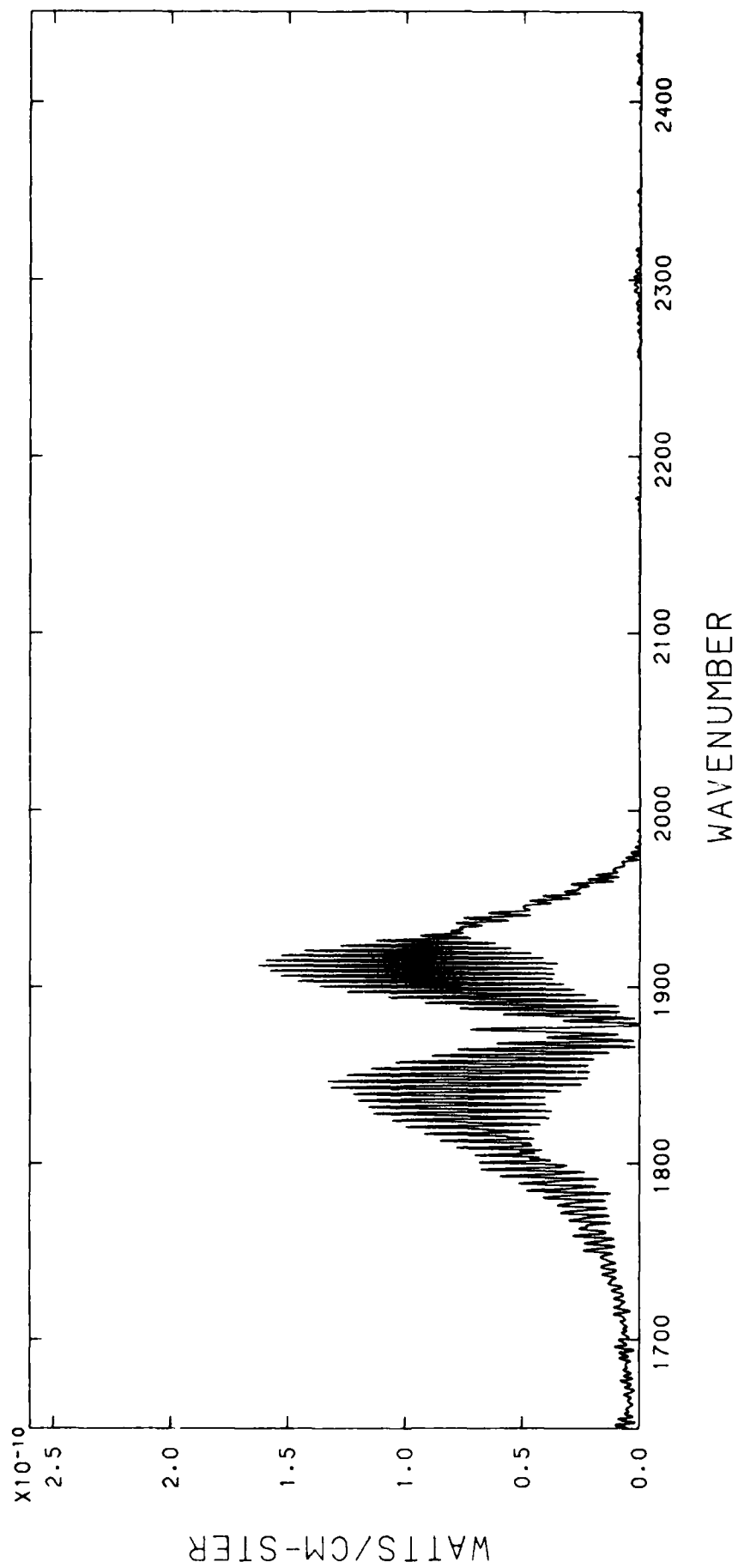
FILE 37, TIME 9: 8:41.978, ALT 128.4-129.1 KM

23-NOV-82 23:08



FILE 37, TIME 9: 8:41.978, ALT 128.4-129.1 KM

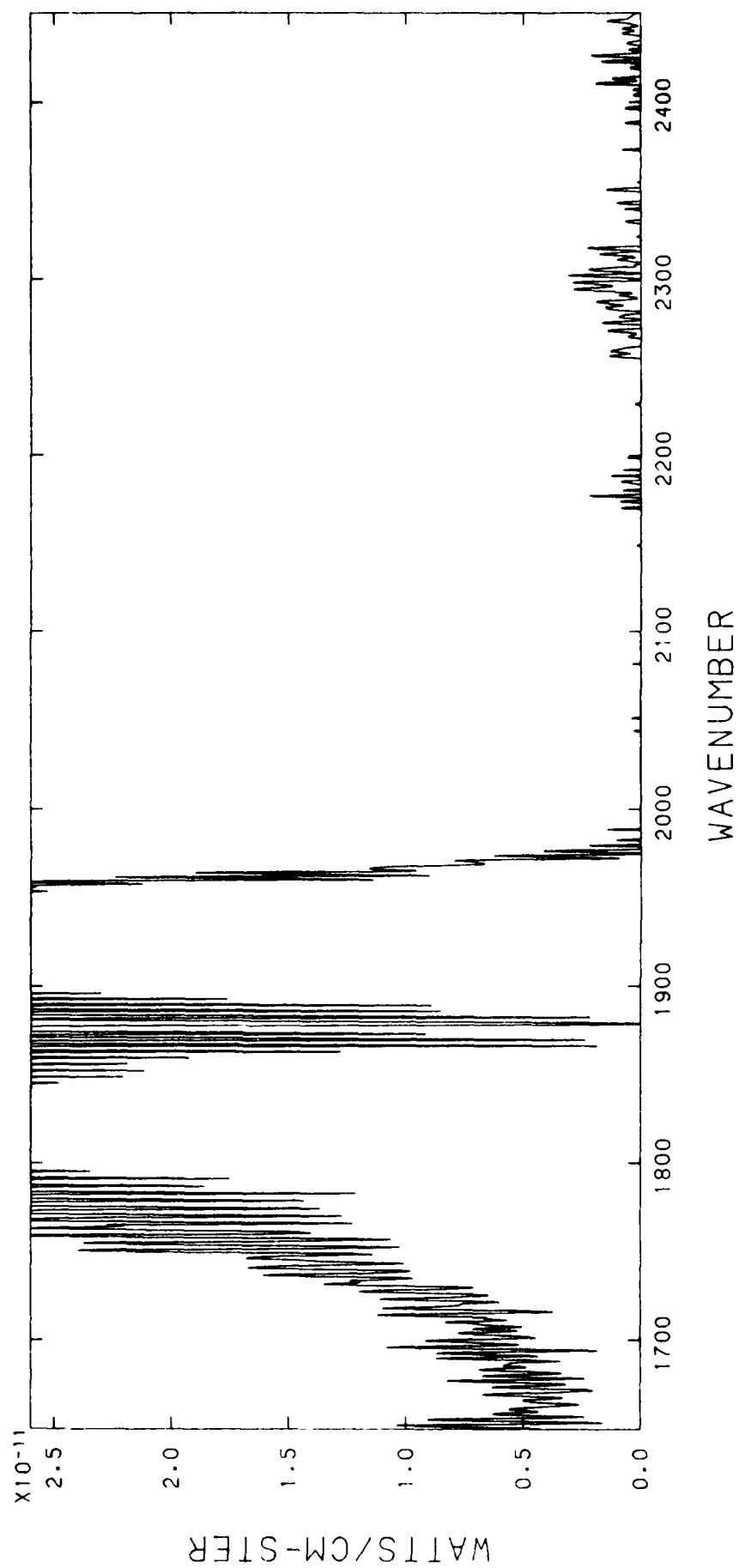
23-NOV-83 23:08



FILE 38, TIME 9: 8:43.606, ALT 129.1-129.8 KM

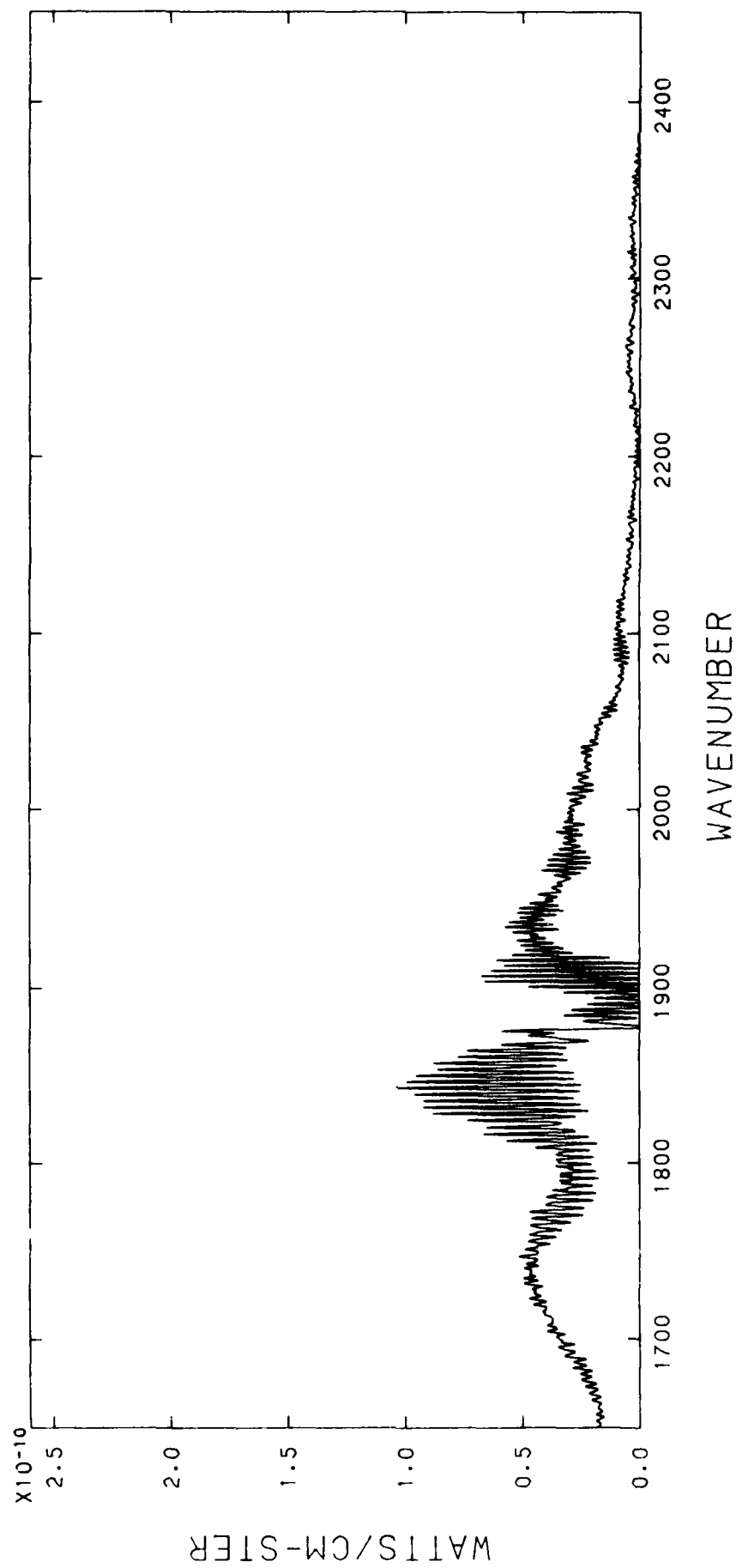
23-NOV-83 23:08





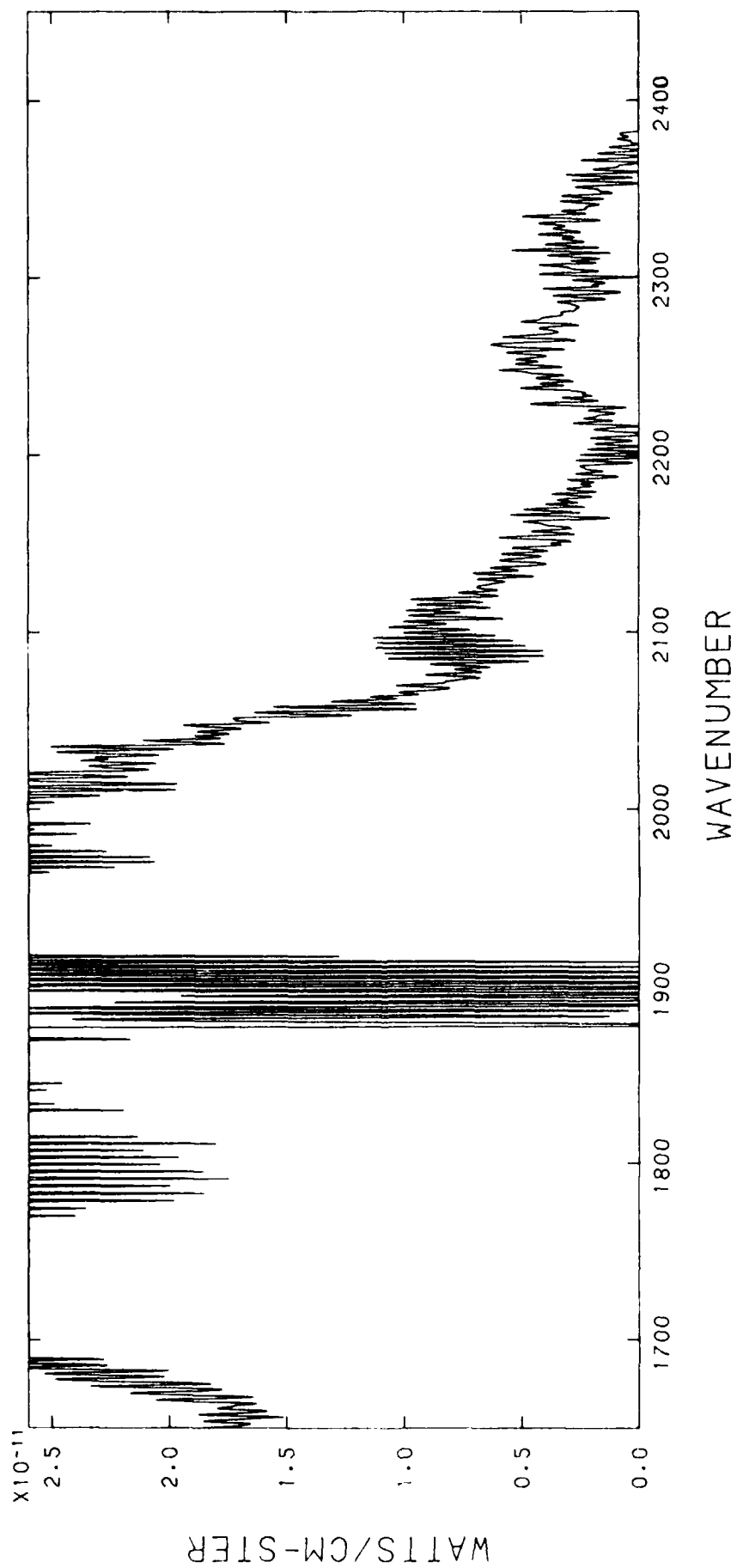
FILE 38, TIME 9: 8:43.606, ALT 129.1-129.8 KM

23-NOV-83 23:08



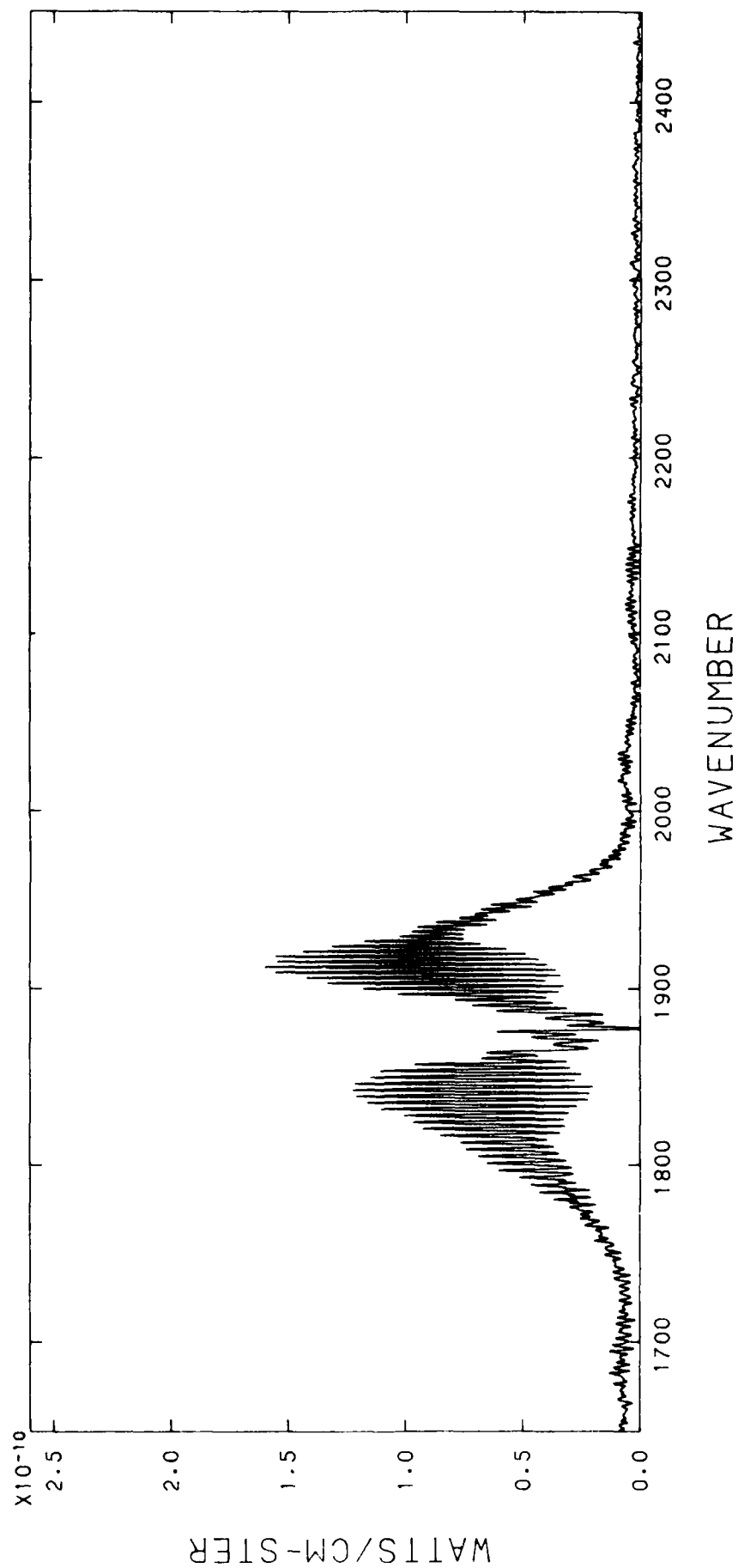
FILE 39, TIME 9: 8:45.234, ALT 129.8-130.5 KM

23-NOV-83 23:08



FILE 39, TIME 9: 8:45.234, ALT 129.8-130.5 KM

23-NOV-83 23:08



FILE 40, TIME 9: 8:46.862, ALT 130.5-131.1 KM

23-NOV-83 23:08

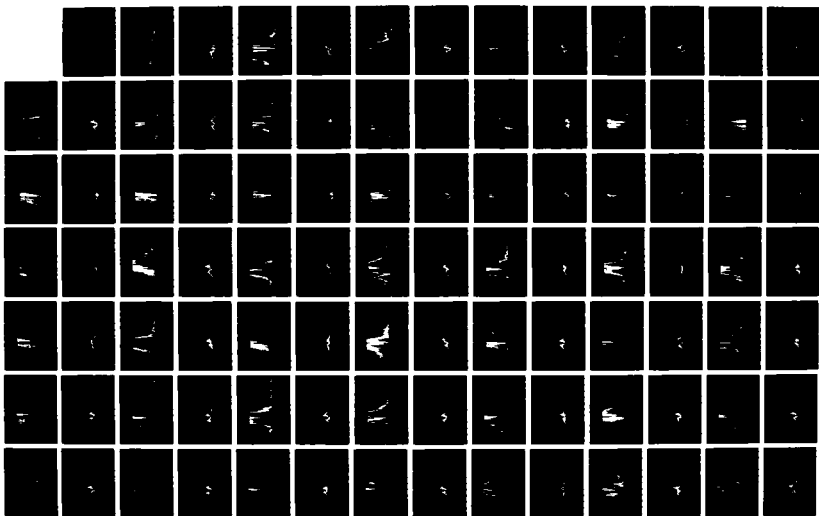
AS-A197 101

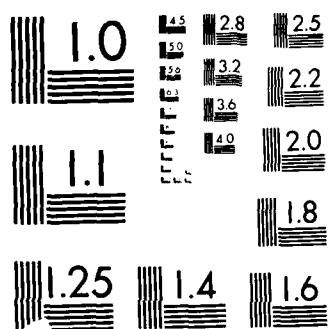
CATALOG OF HIGH RESOLUTION INFRARED SPECTRA:  
FIELD-HIDENED INTERFEROMETER. (U) NOTRE DAME UNIV IN  
DEPT OF CIVIL ENGINEERING R H HAYCOCK ET AL. 26 JUN 85

2/4

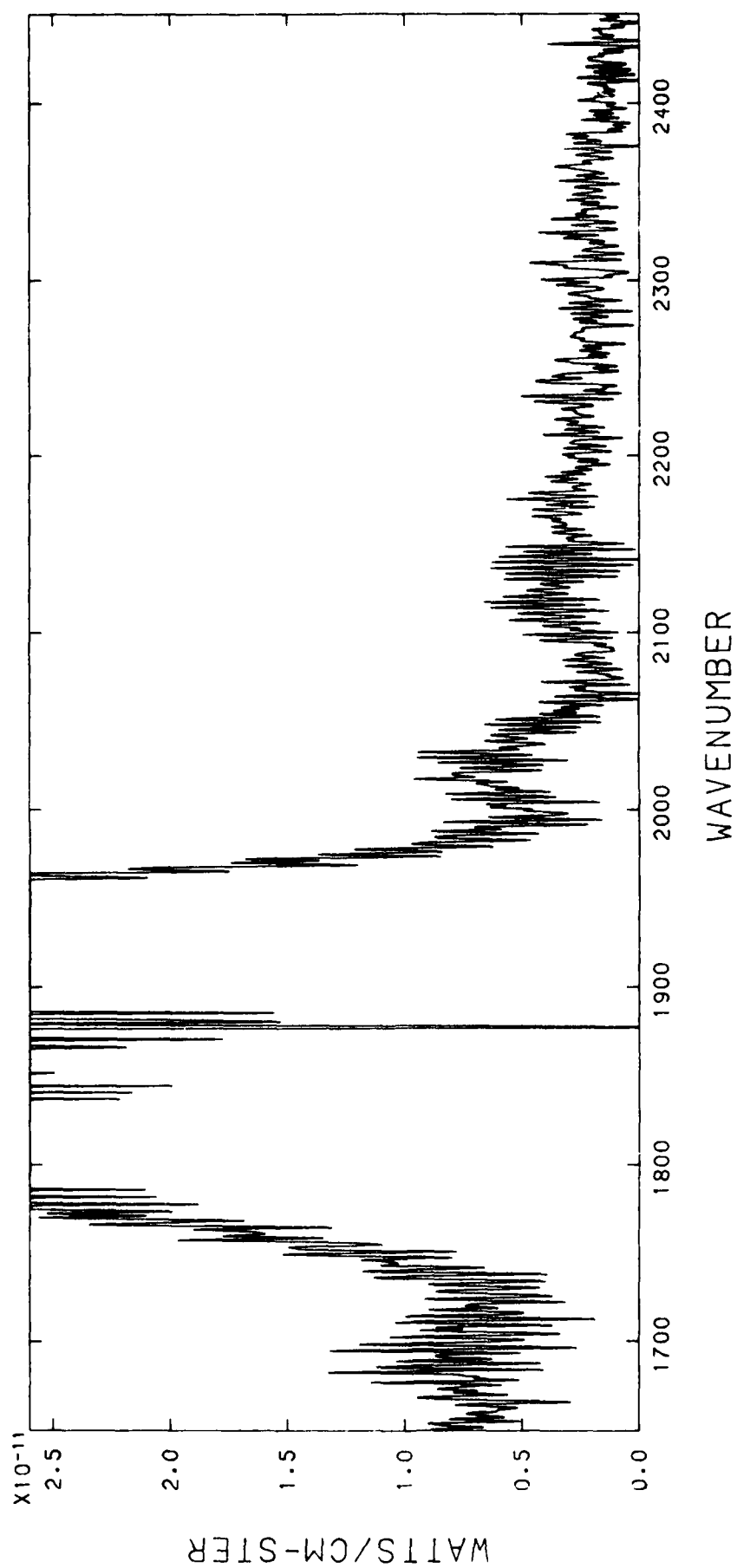
UNCLASSIFIED

SDL/85-845 AFGL-TR-85-0161 F19620-03-C-0056 F/G 17/5.1 NL



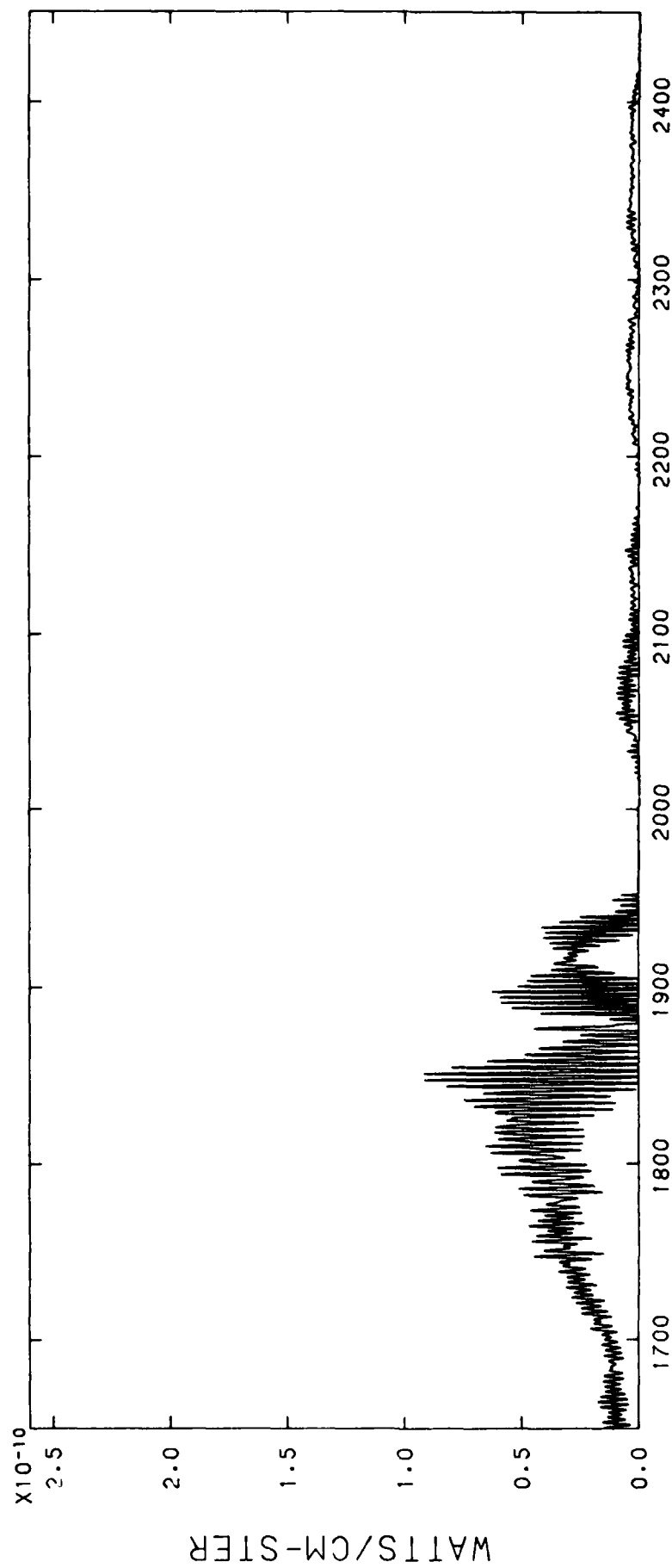


UTION TEST CHART



FILE 40, TIME 9: 8:46.862, ALT 130.5-131.1 KM

23-NOV-83 23:09

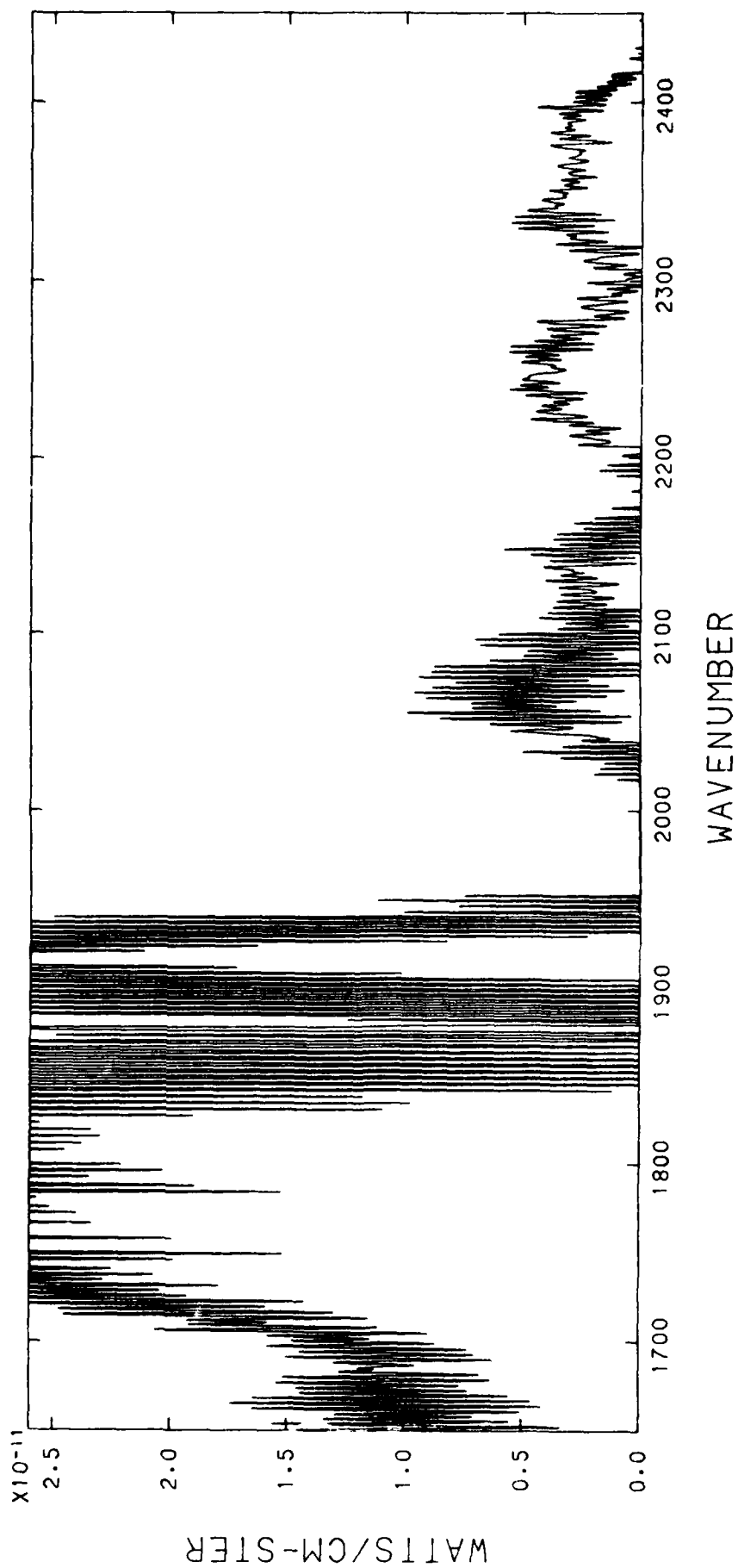


WAVENUMBER

FILE 41, TIME 9: 8:48.498, ALT 131.1-131.7 KM

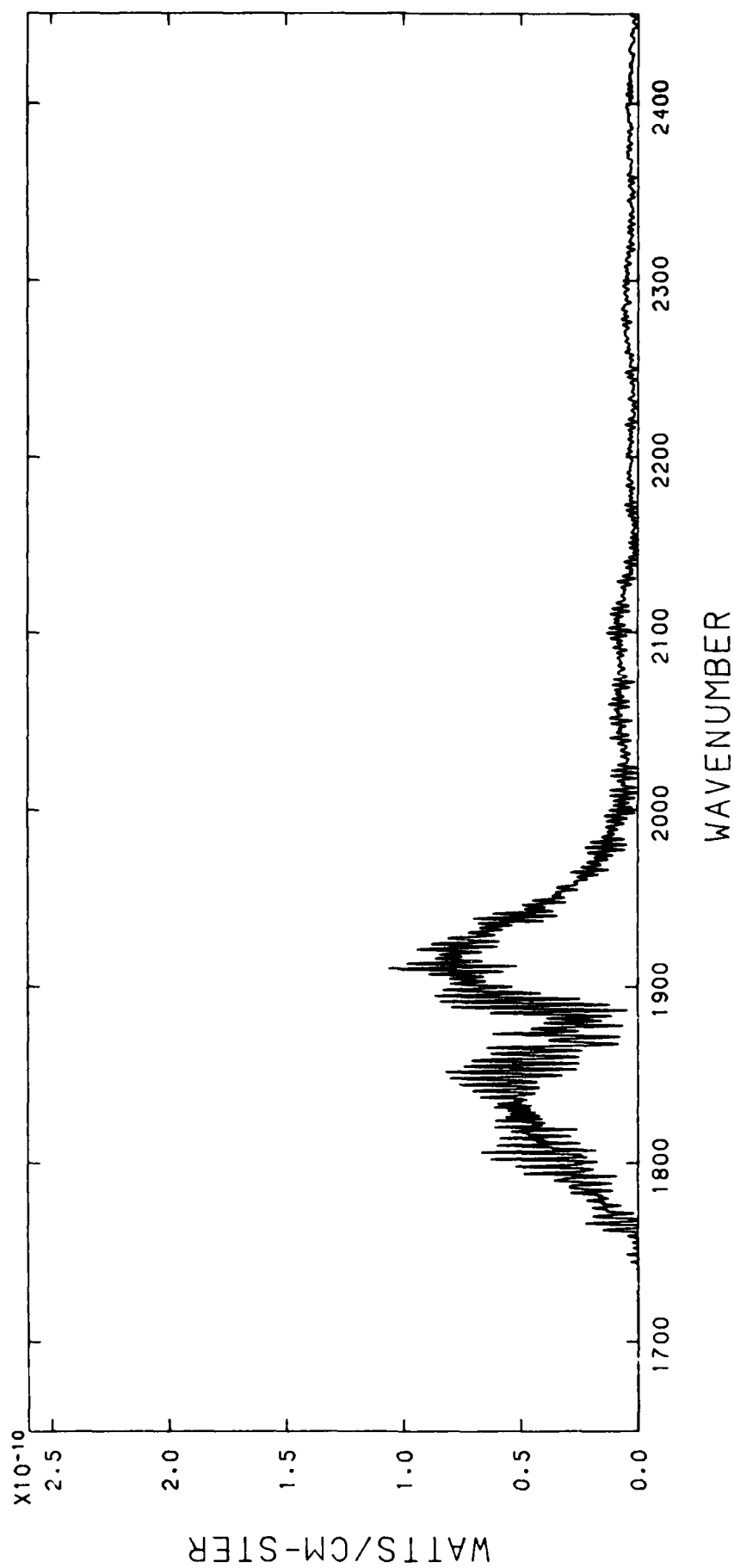
23-NOV-83 23:09





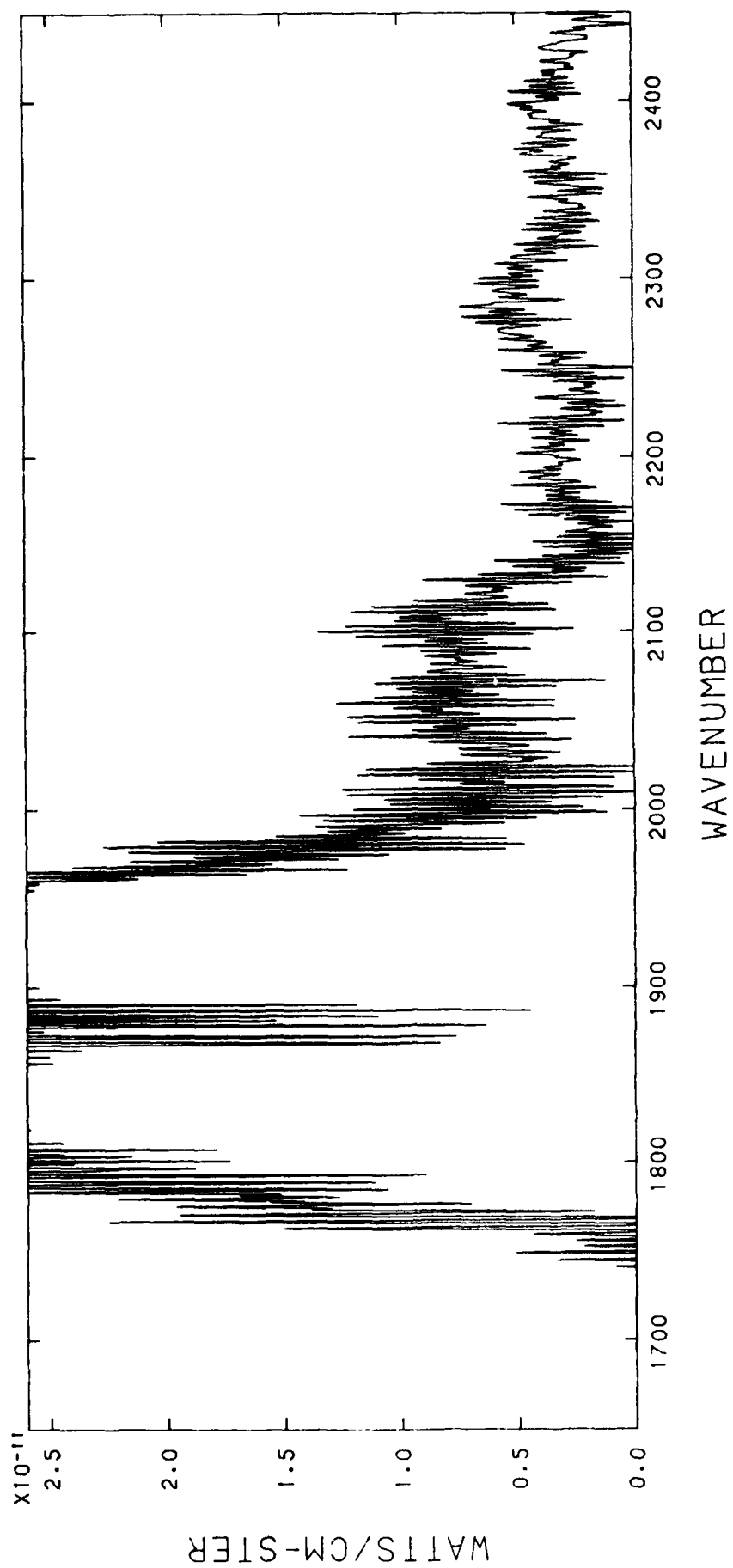
FILE 41, TIME 9: 8:48.498, ALT 131.1-131.7 KM

23-NOV-83 23:09



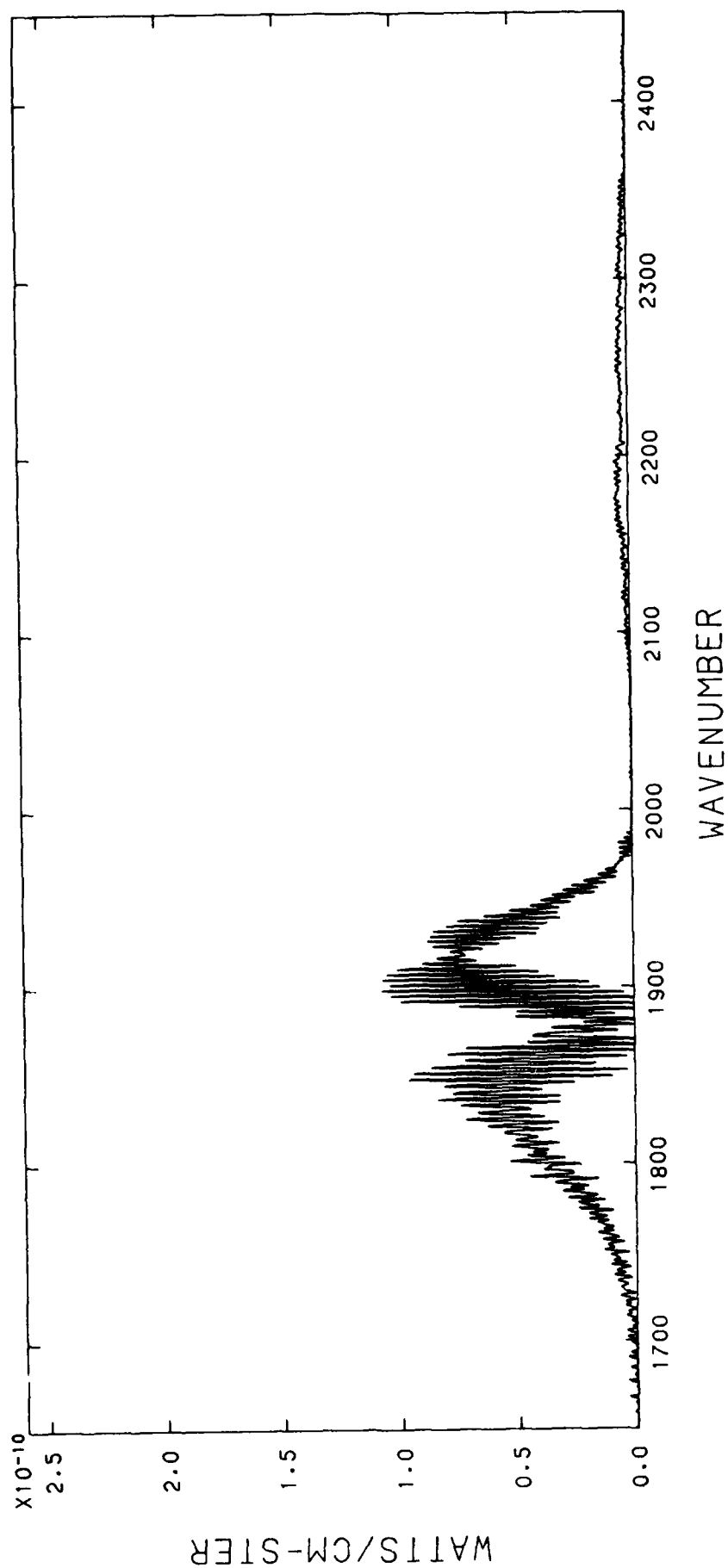
FILE 42, TIME 9: 8:50.136, ALT 131.8-132.4 KM

23-NOV-83 23:09



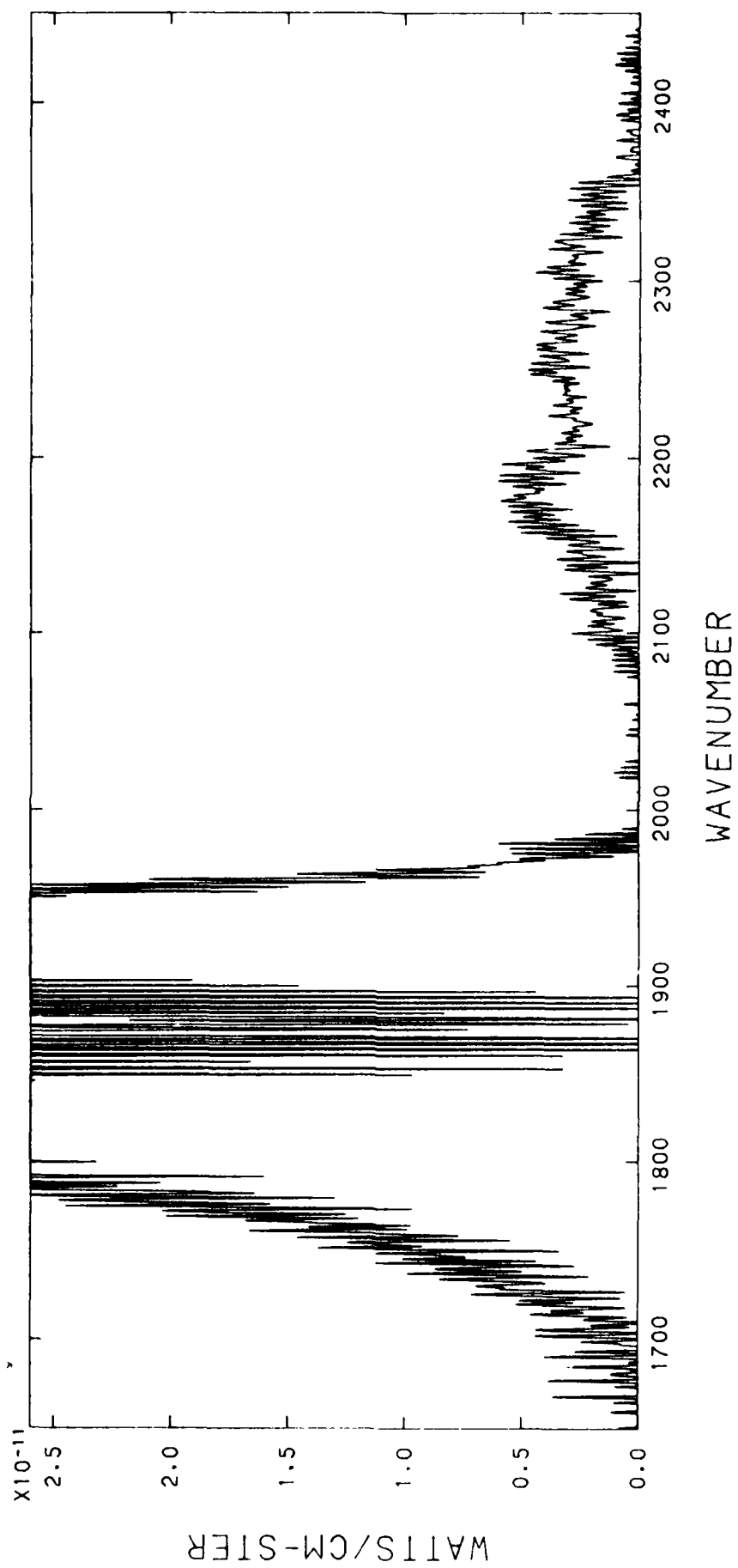
FILE 42, TIME 9: 8:50.136, ALT 131.8-132.4 KM

23-NOV-83 23:09

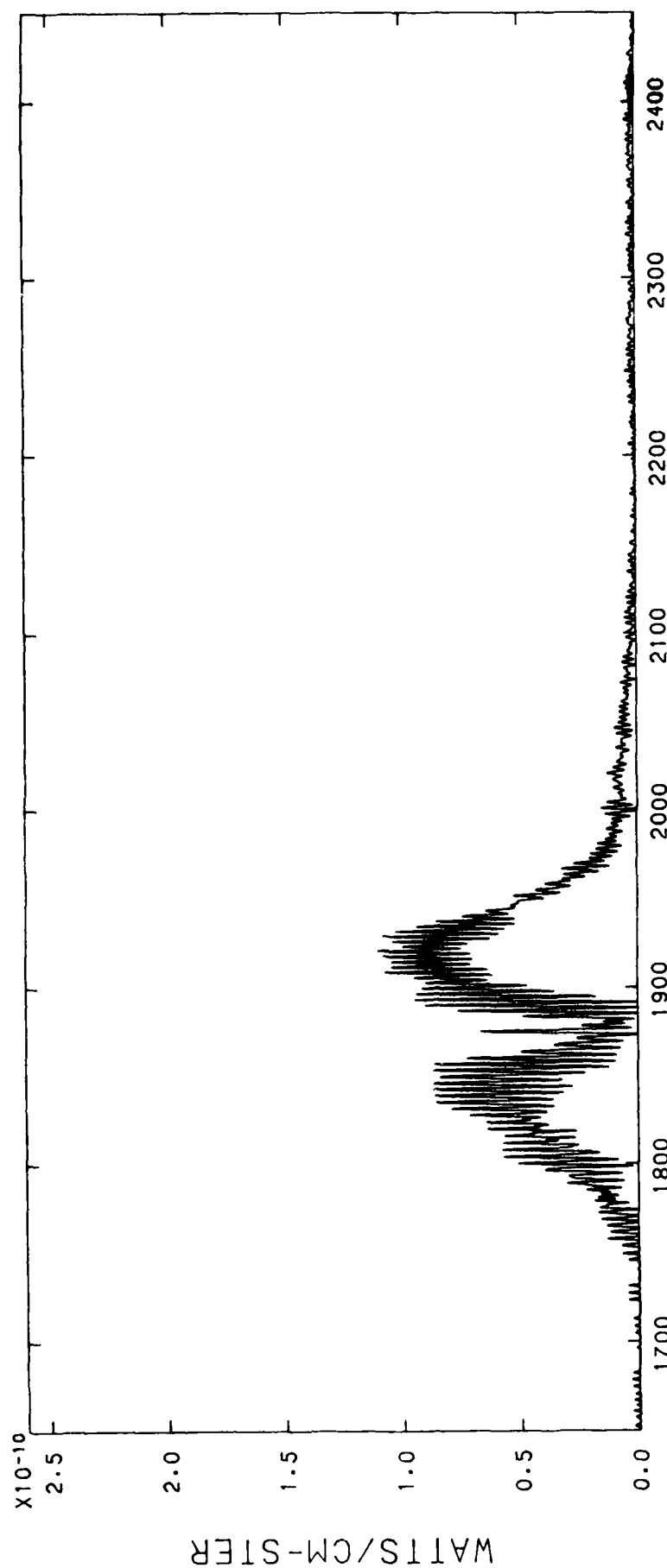


FILE 43, TIME 9: 8:51.768, ALT 132.4-132.9 KM

23-NOV-83 23:09



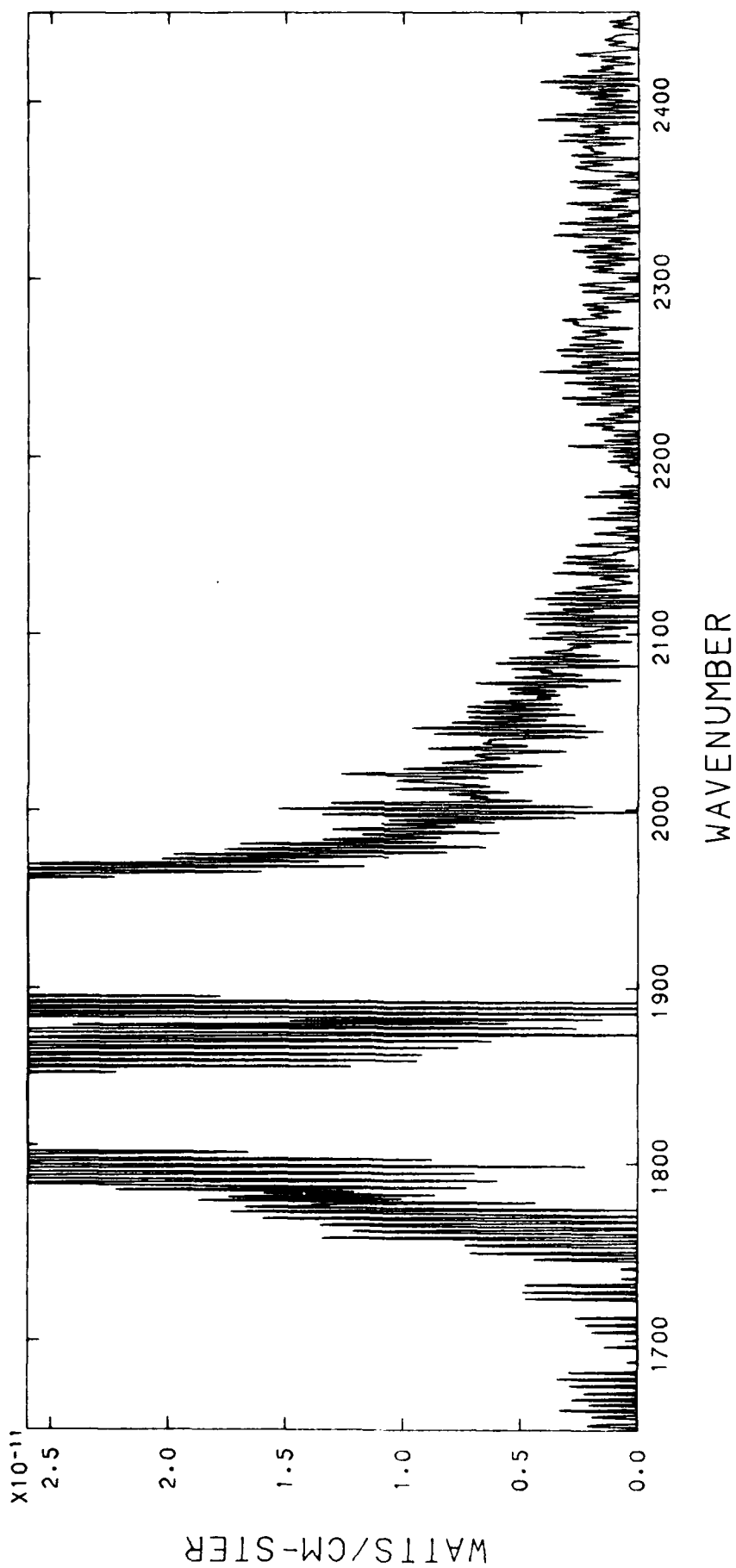
FILE 43, TIME 9: 8:51.768, ALT 132.4-132.9 KM



WAVENUMBER

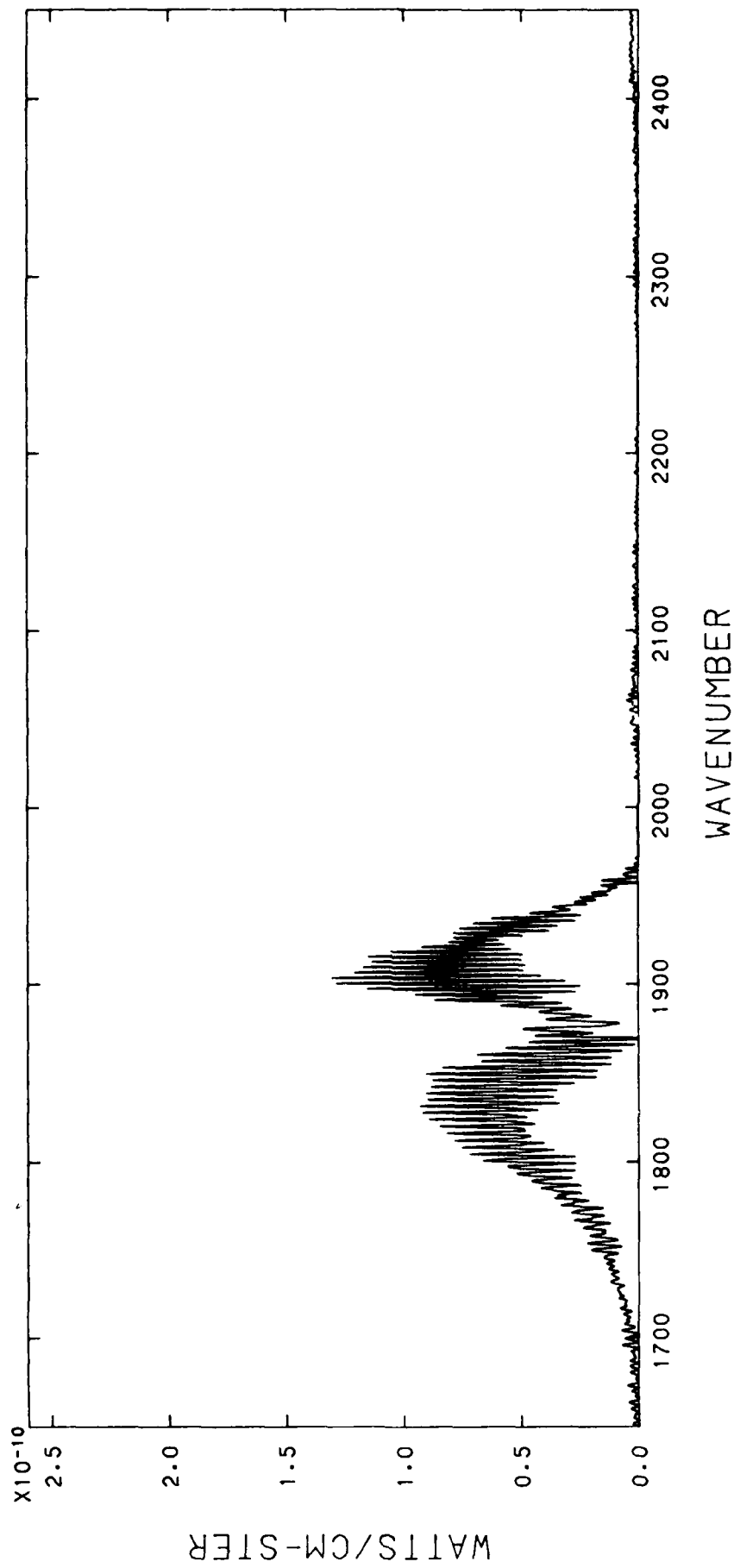
FILE 44, TIME 9: 8:53.402, ALT 132.9-133.5 KM

23-NOV-83 23:09



FILE 44, TIME 9: 8:53.402, ALT 132.9-133.5 KM

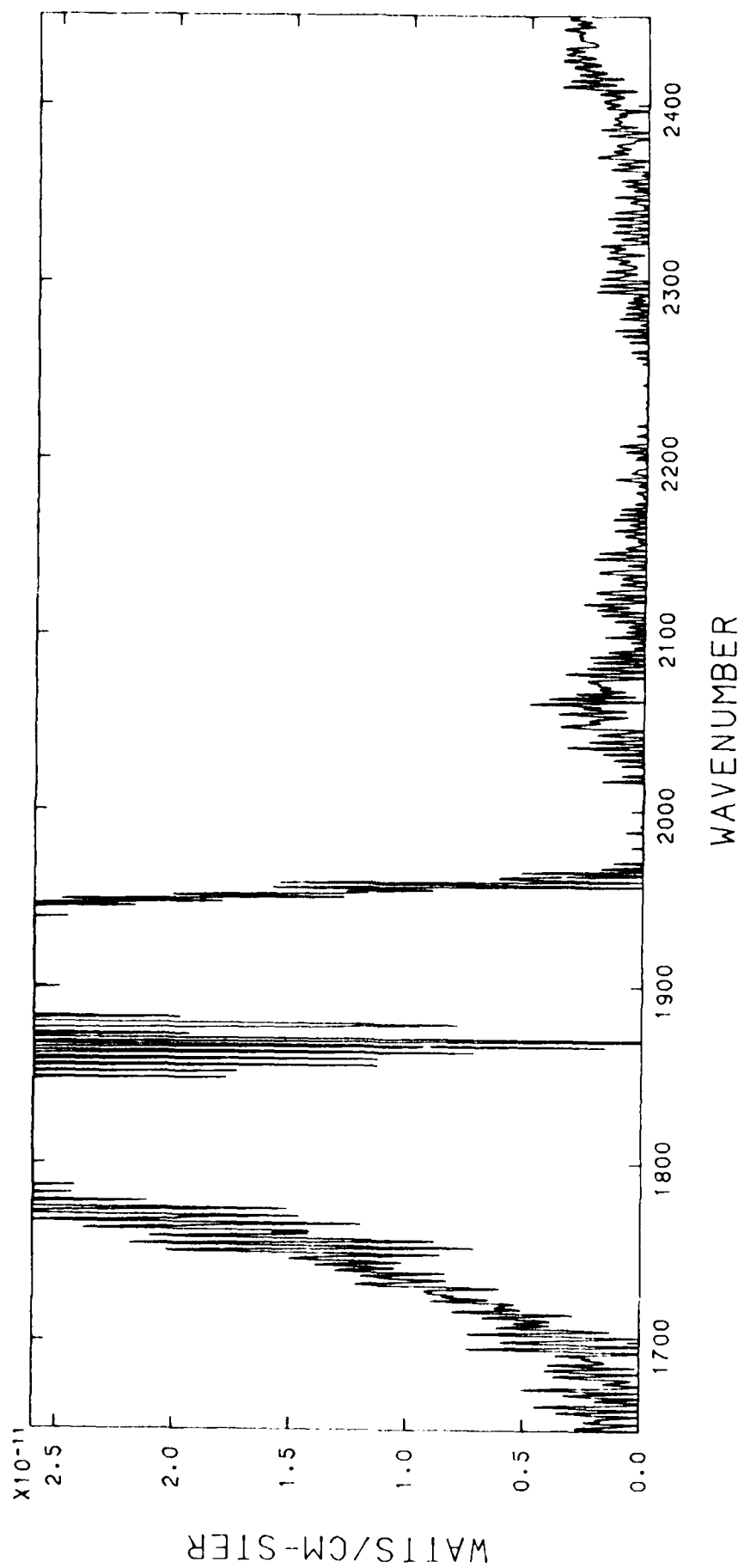
23-NOV-83 23:10



FILE 45, TIME 9: 8:55. 30, ALT 133.5-134.0 KM

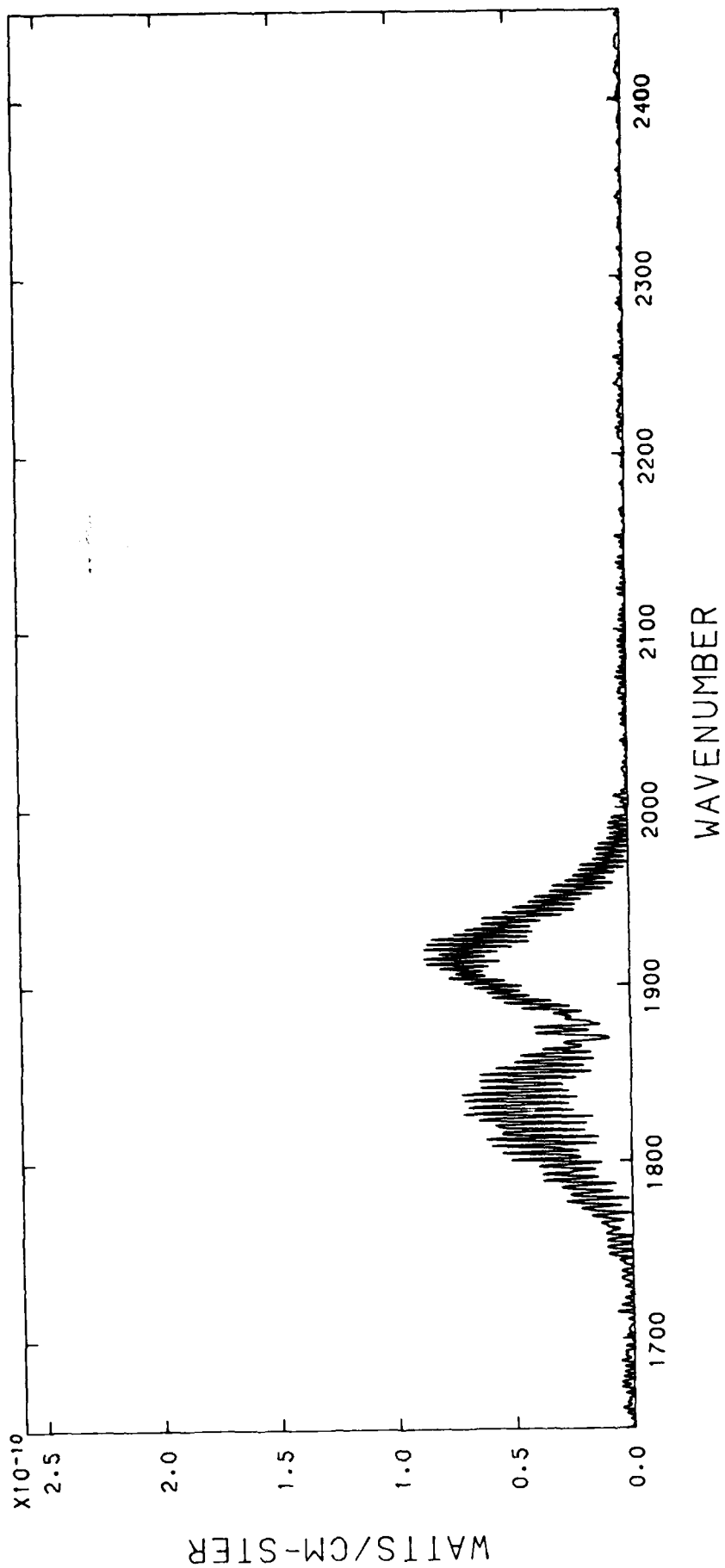
23-NOV-83 23:10





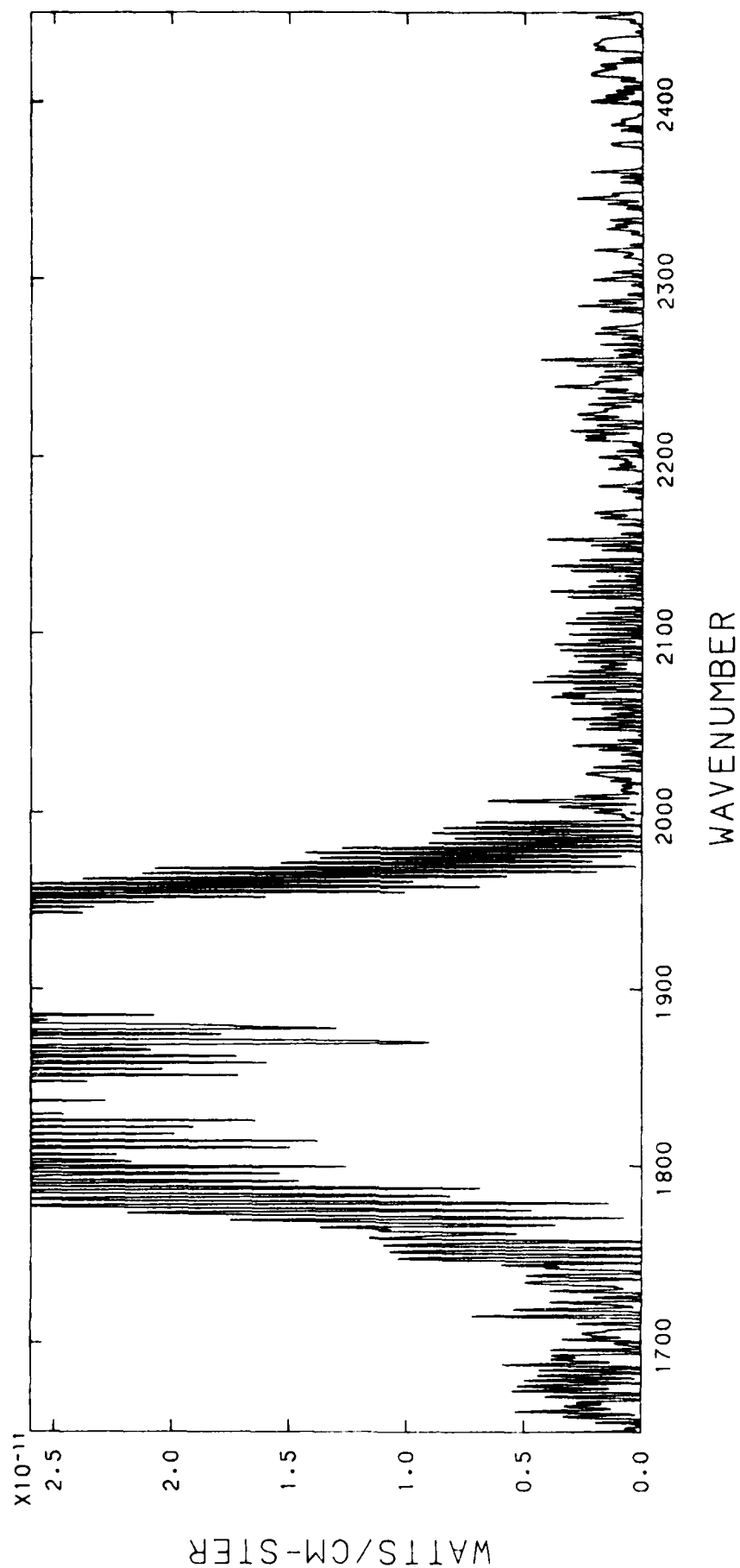
FILE 45, TIME 9: 8:55. 30, ALT 133.5-134.0 KM

23-NOV-83 23:10



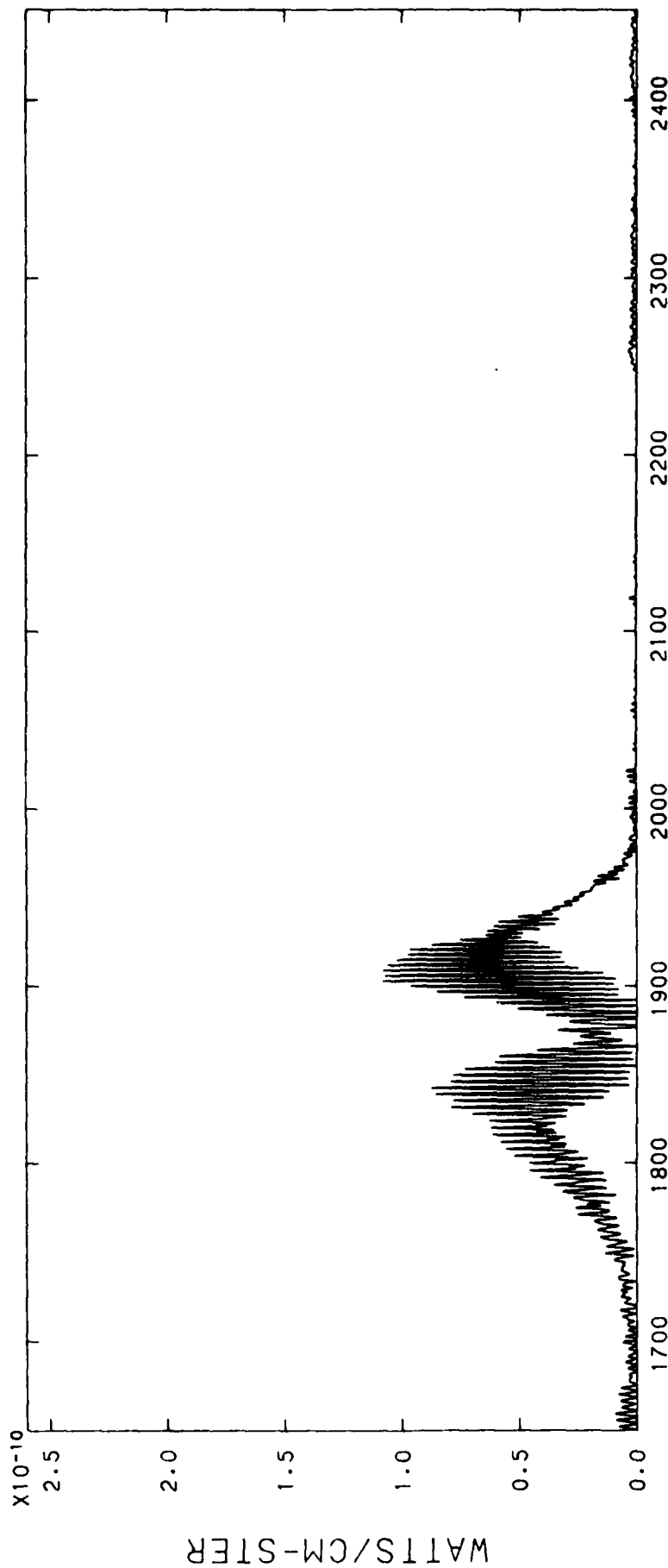
FILE 46, TIME 9: 8:56.658, ALT 134.0-134.5 KM

23-NOV-83 23:10



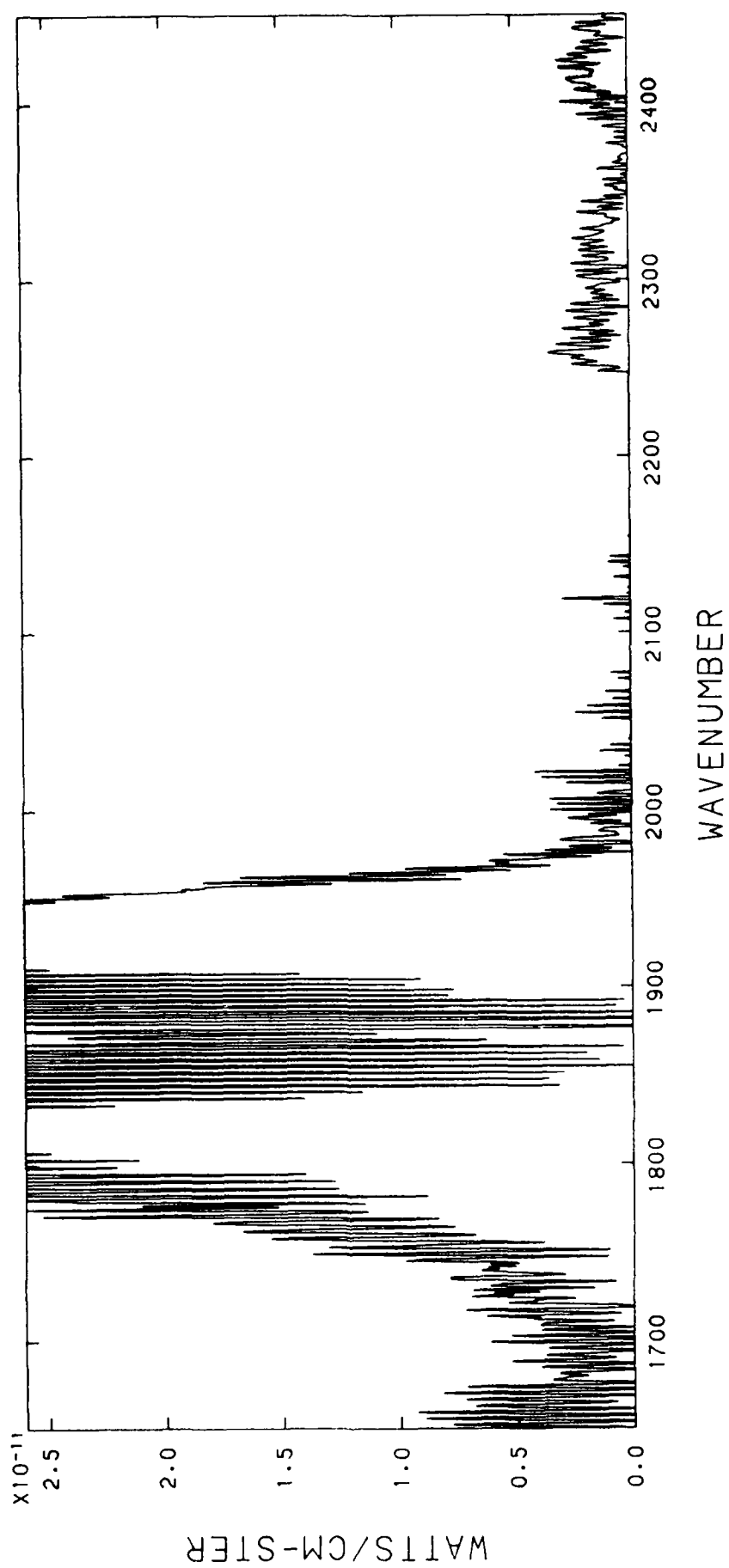
FILE 46, TIME 9: 8:56.658, ALT 134.0-134.5 KM

23-NOV-83 23:10

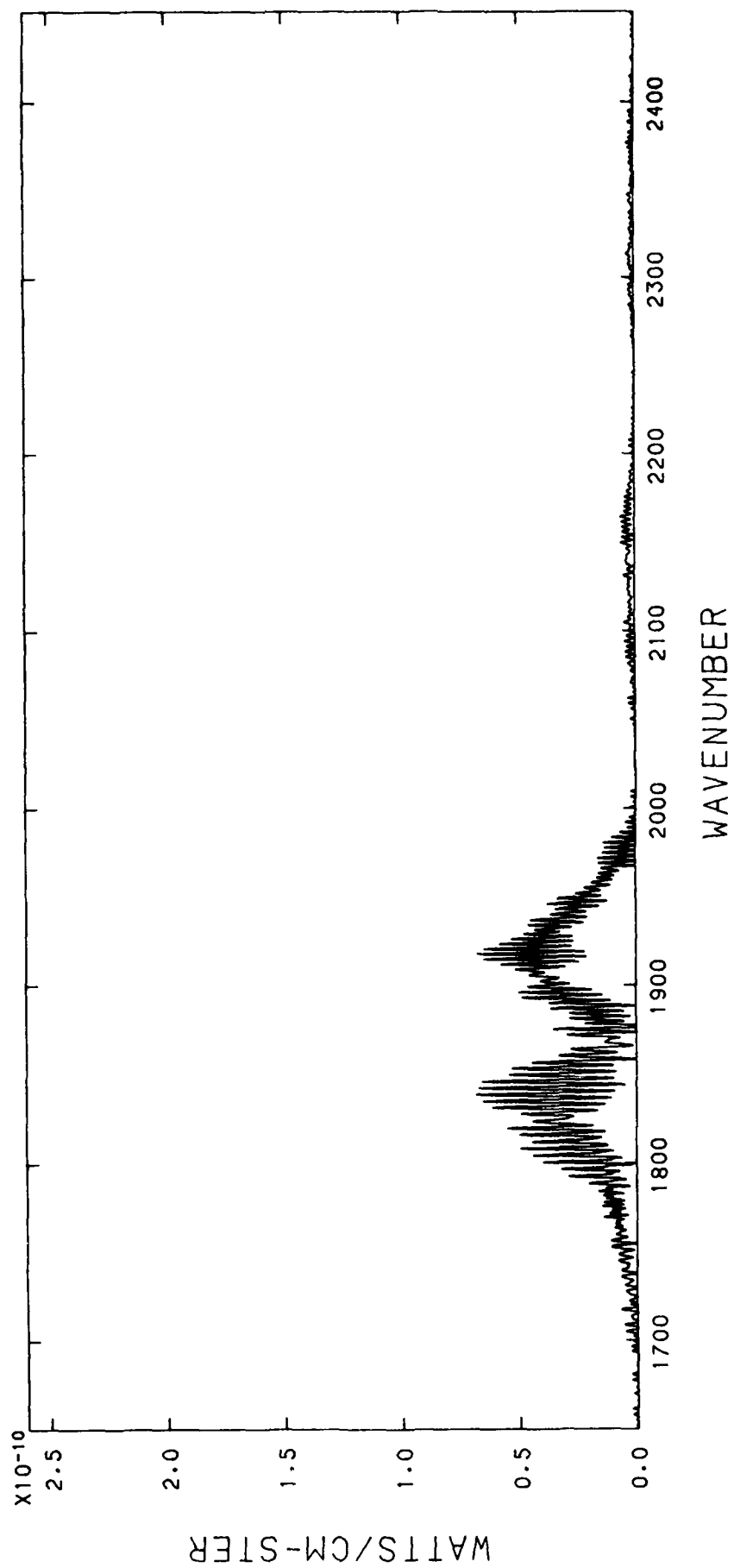


FILE 47, TIME 9: 8:58.286, ALT 134.5-135.0 KM

23-NOV-83 23:10

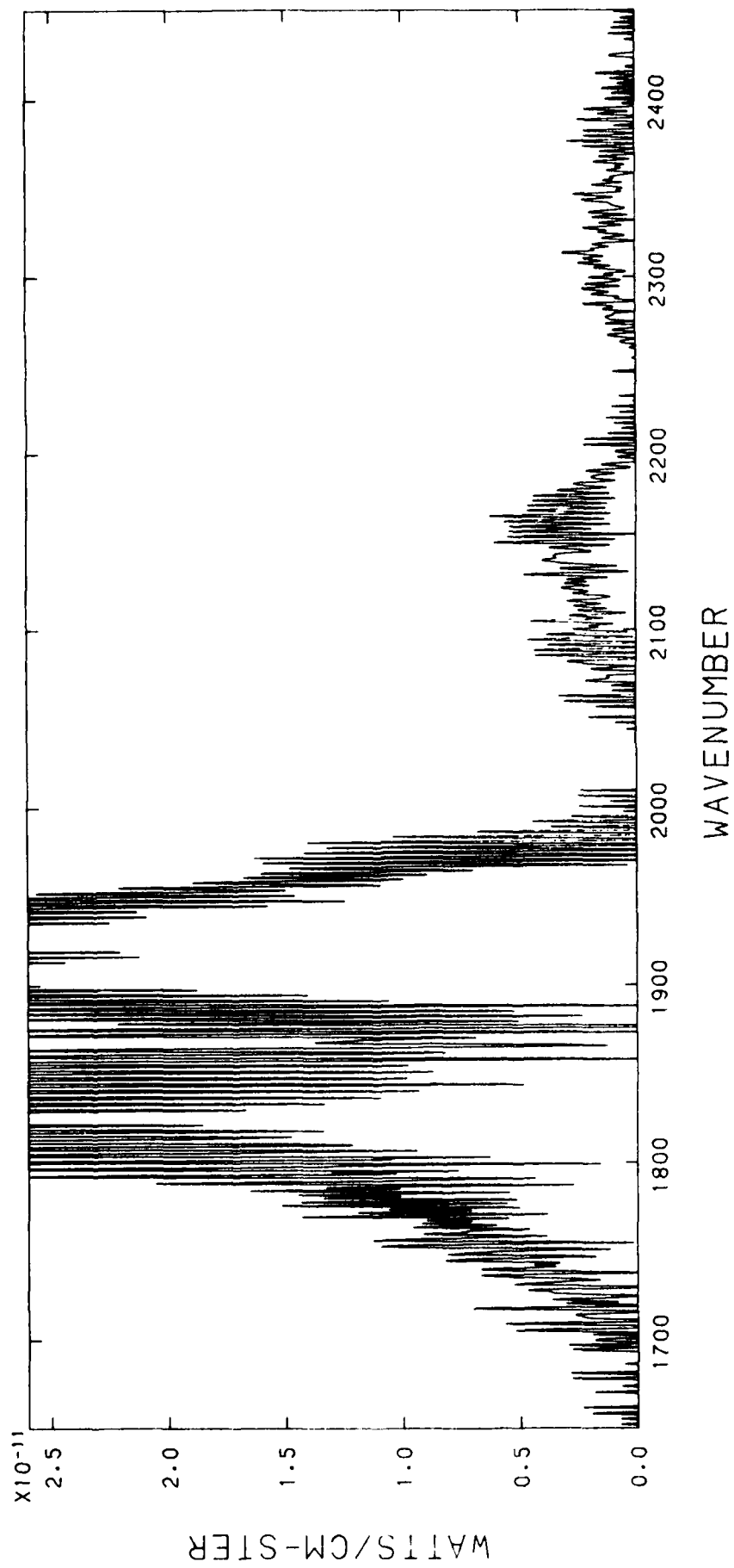


FILE 47, TIME 9: 8:58.286, ALT 134.5-135.0 KM

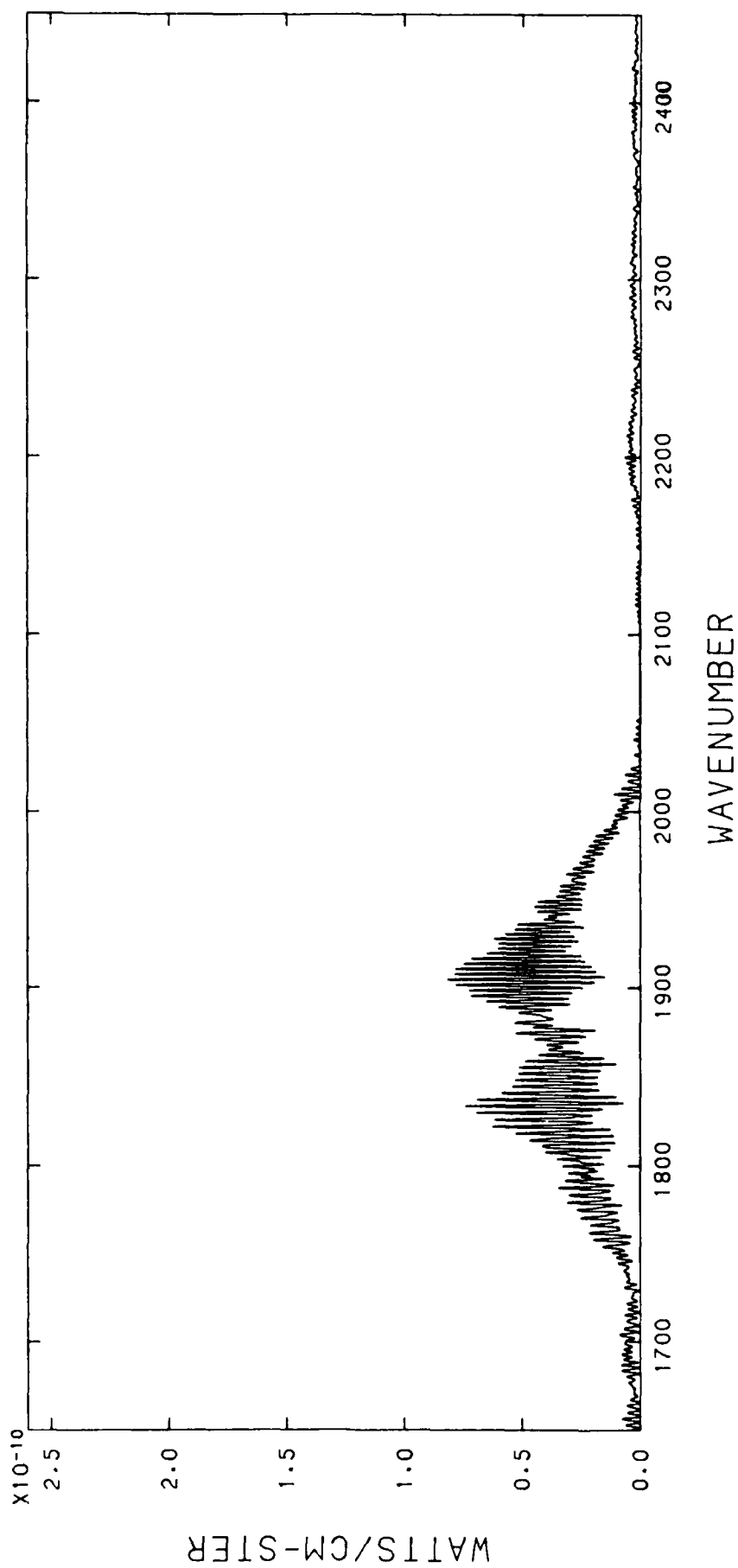


FILE 48, TIME 9: 8:59.916, ALT 135.0-135.4 KM

23-NOV-83 23:10



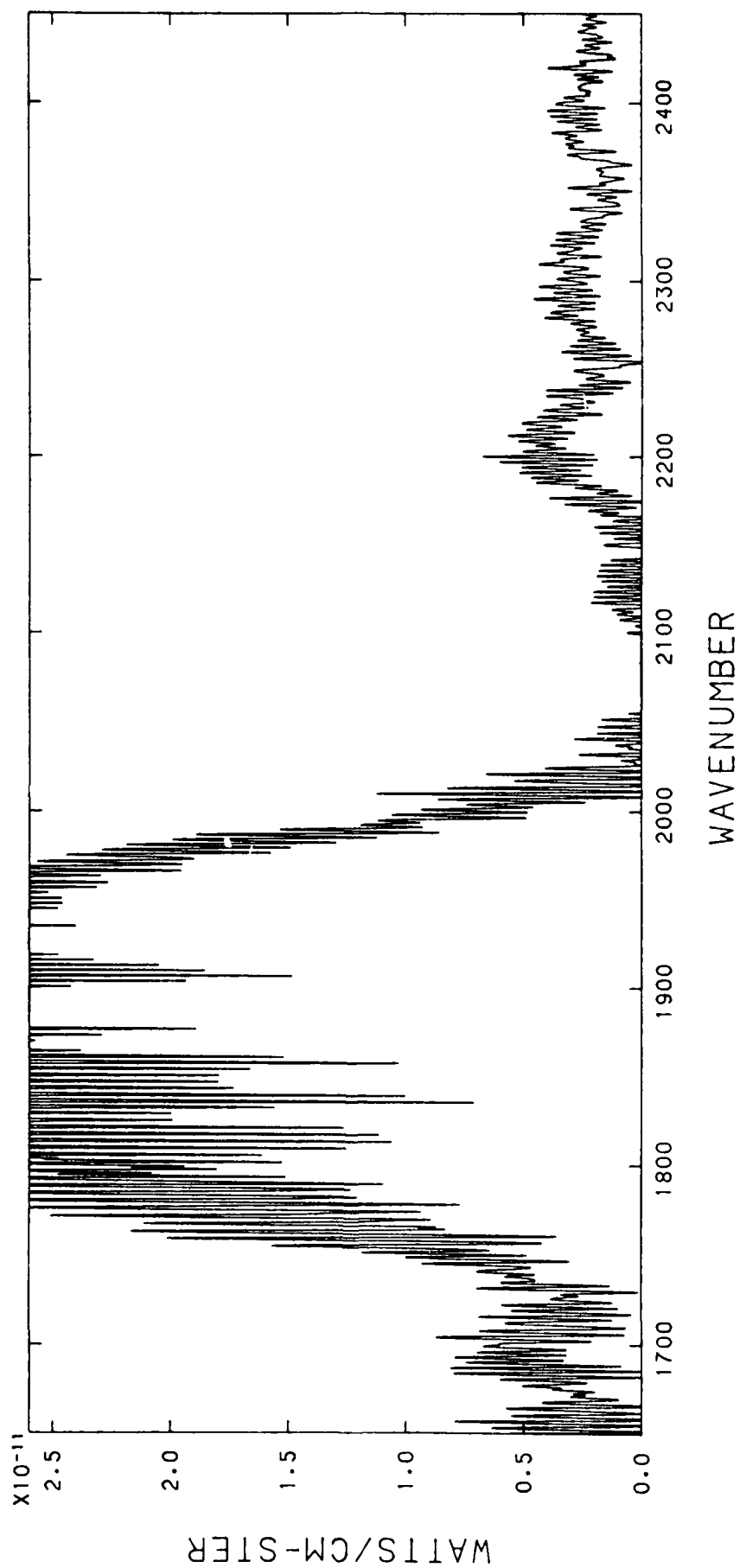
FILE 48, TIME 9: 8:59.916, ALT 135.0-135.4 KM



FILE 49, TIME 9: 9: 1.548, ALT 135.4-135.9 KM

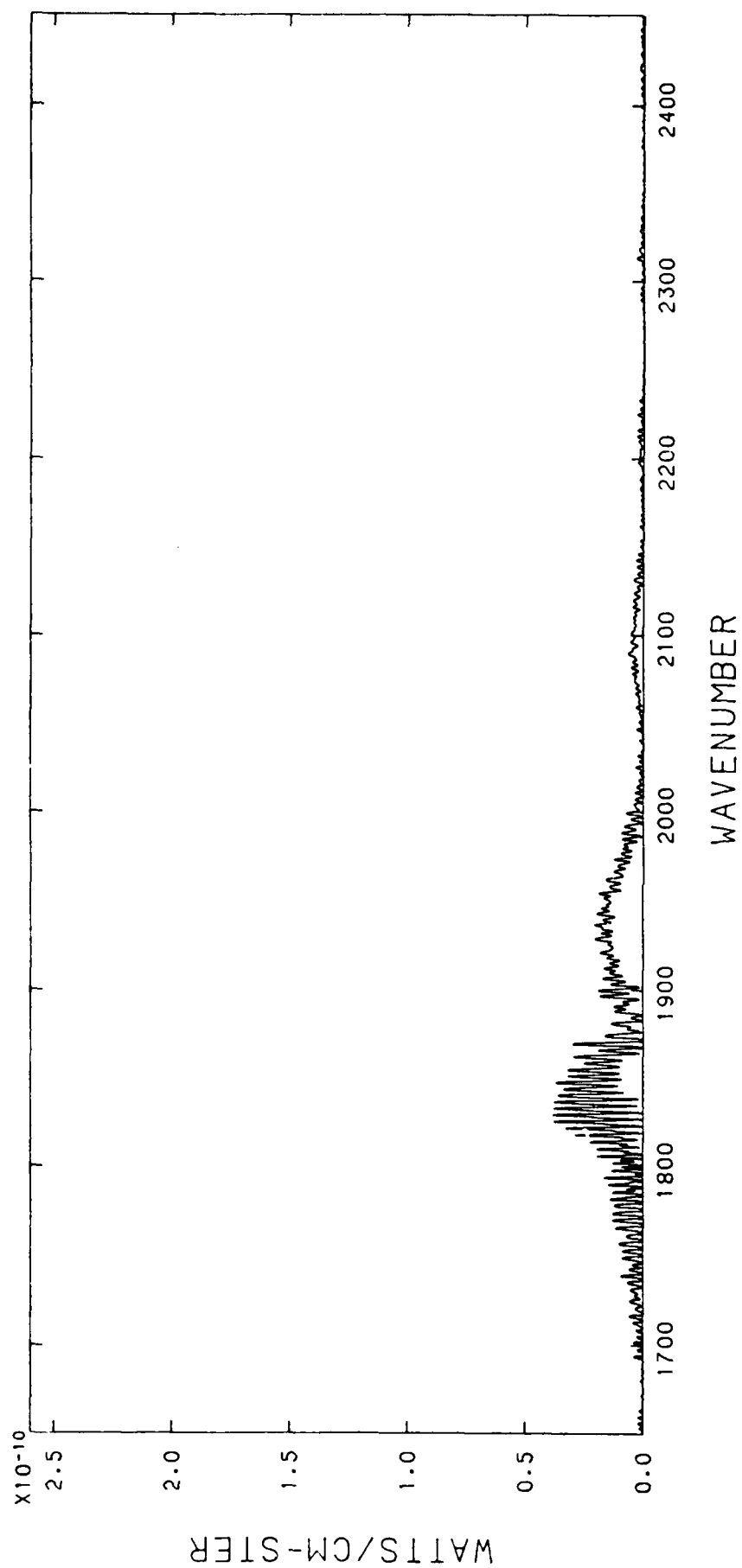
23-NOV-83 23:11





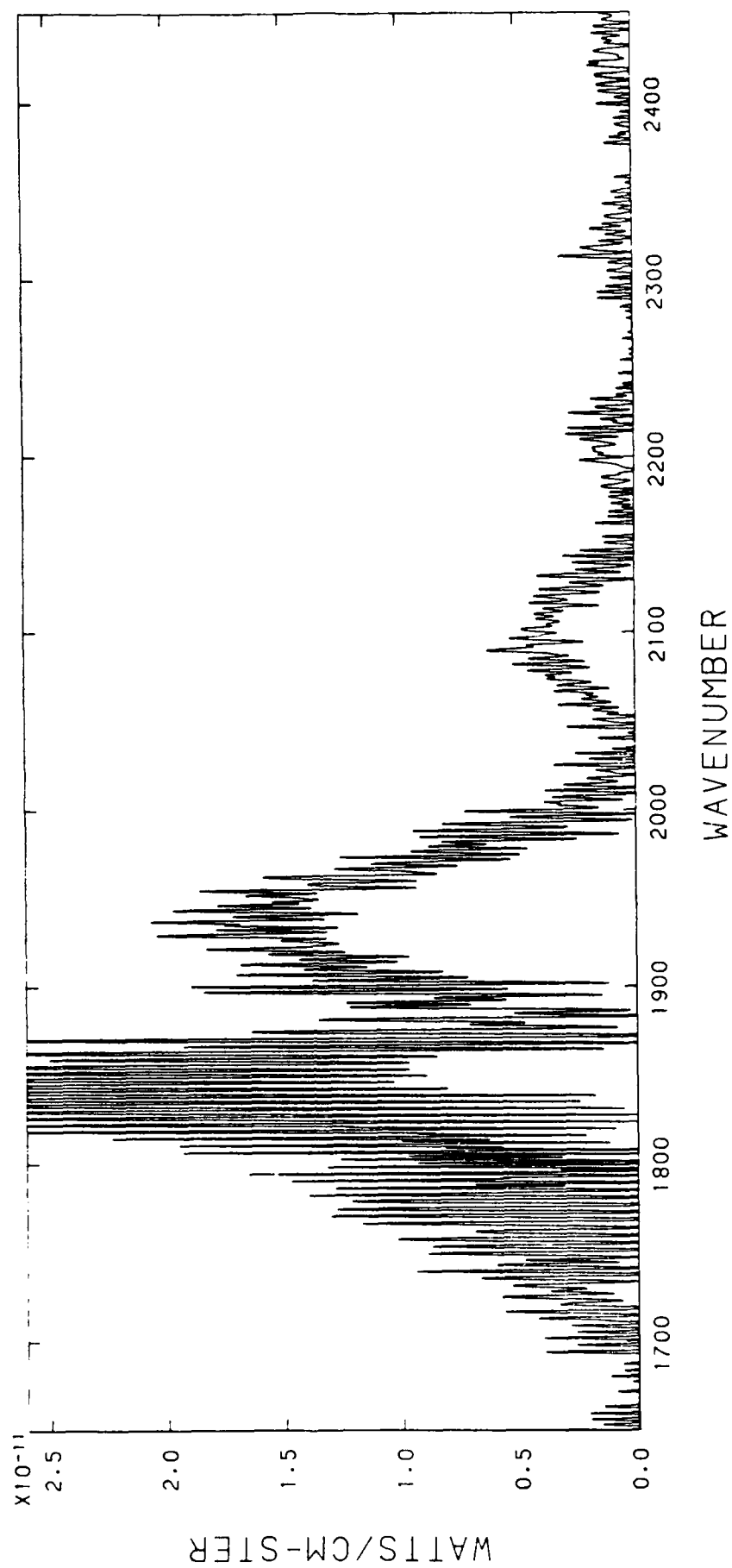
FILE 49, TIME 9: 9: 1.548, ALT 135.4-135.9 KM

23-NOV-83 23:11

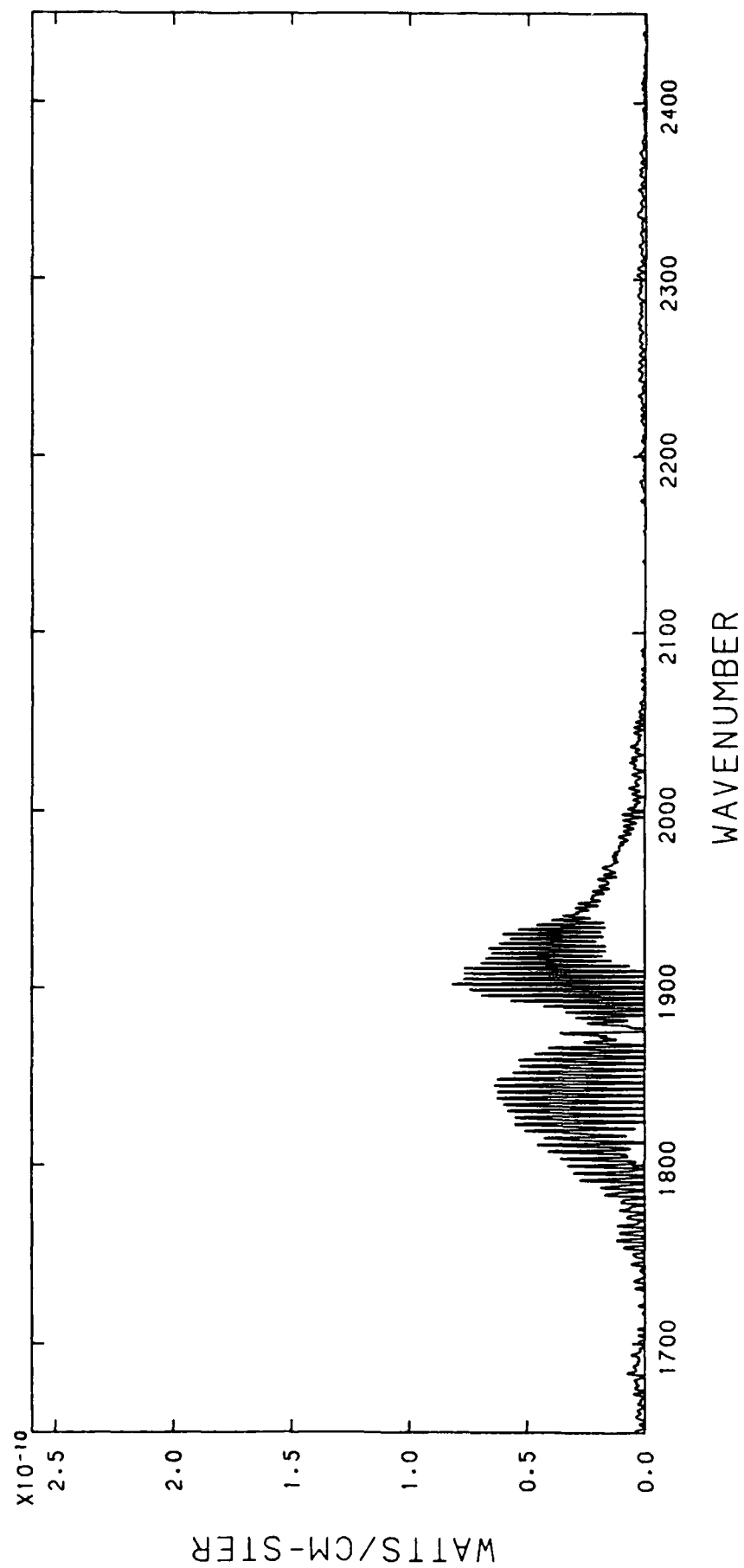


FILE 50, TIME 9: 9: 3.180, ALT 135.9-136.3 KM

23-NOV-83 23:11

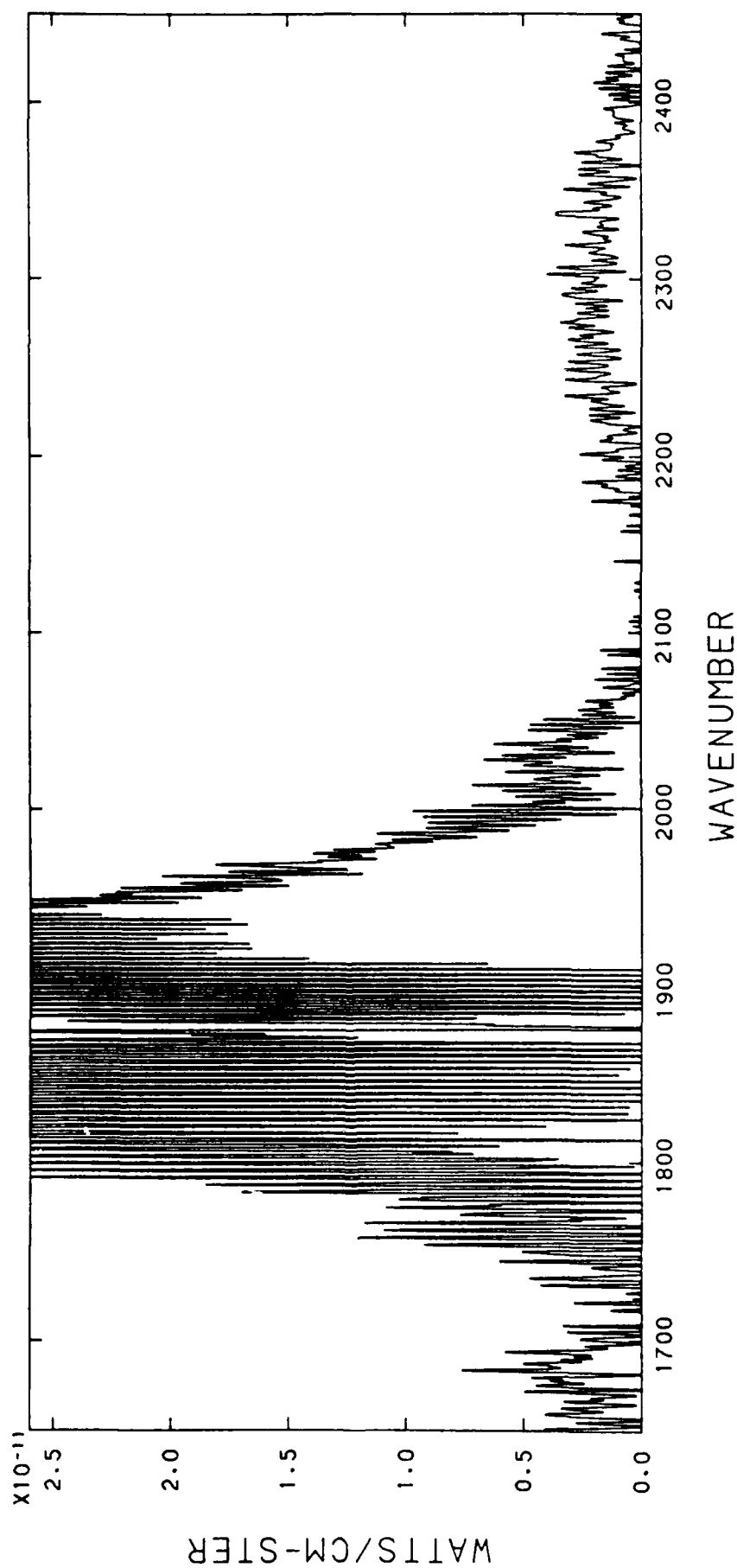


FILE 50, TIME 9: 9: 3.180, ALT 135.9-136.3 KM

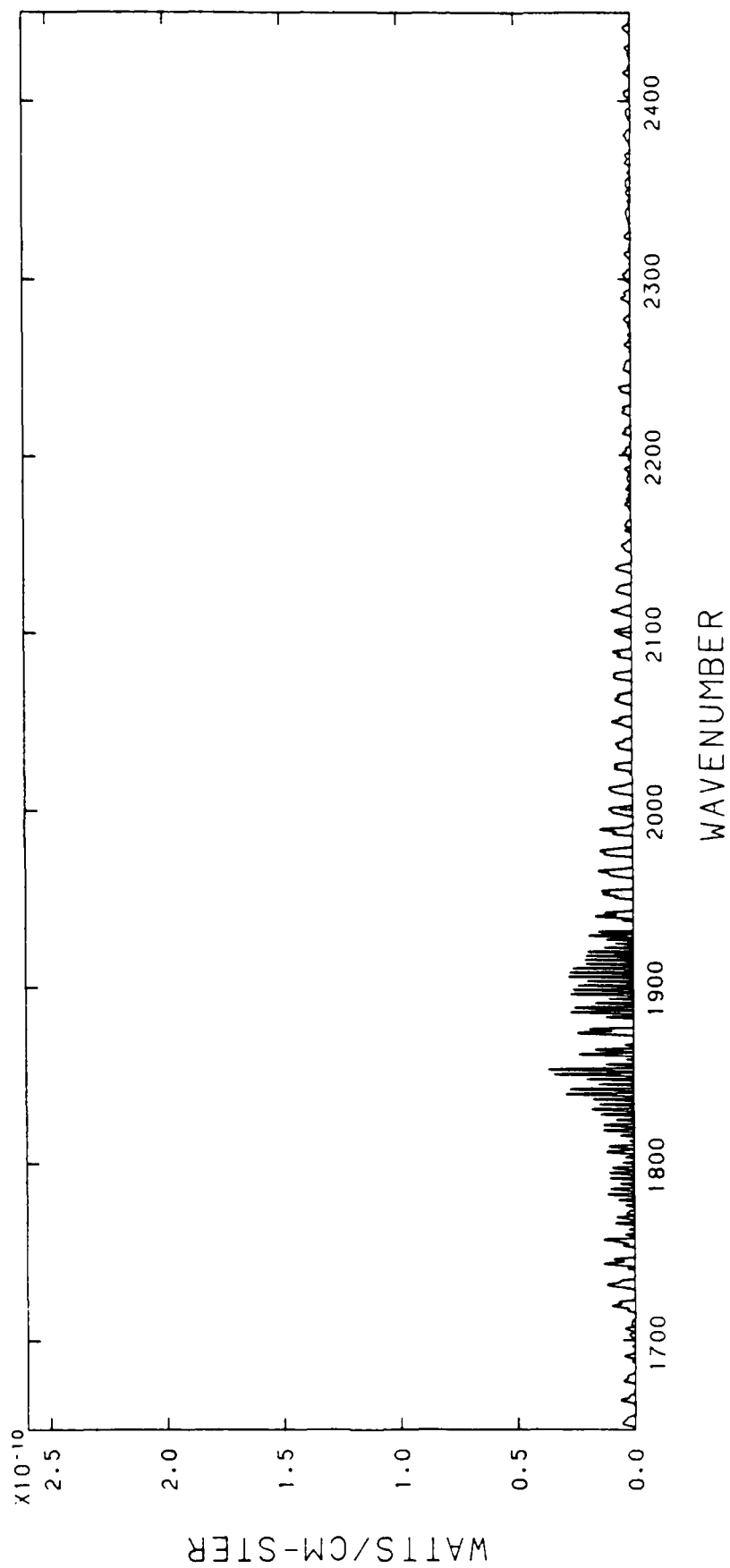


FILE 51, TIME 9: 9: 4.808, ALT 136.3-136.6 KM

24-NOV-83 00:28

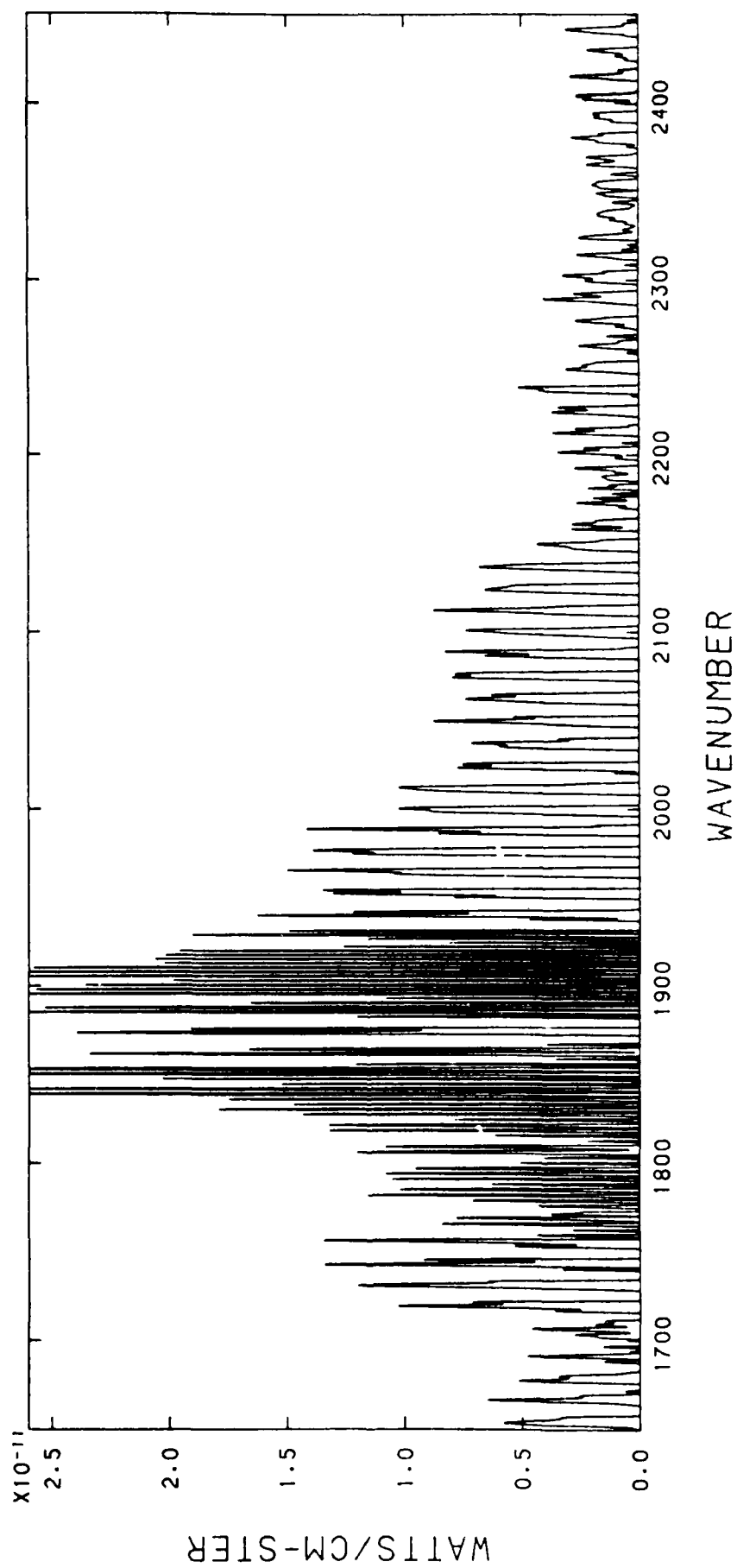


FILE 51, TIME 9: 9: 4.808, ALT 136.3-136.6 KM

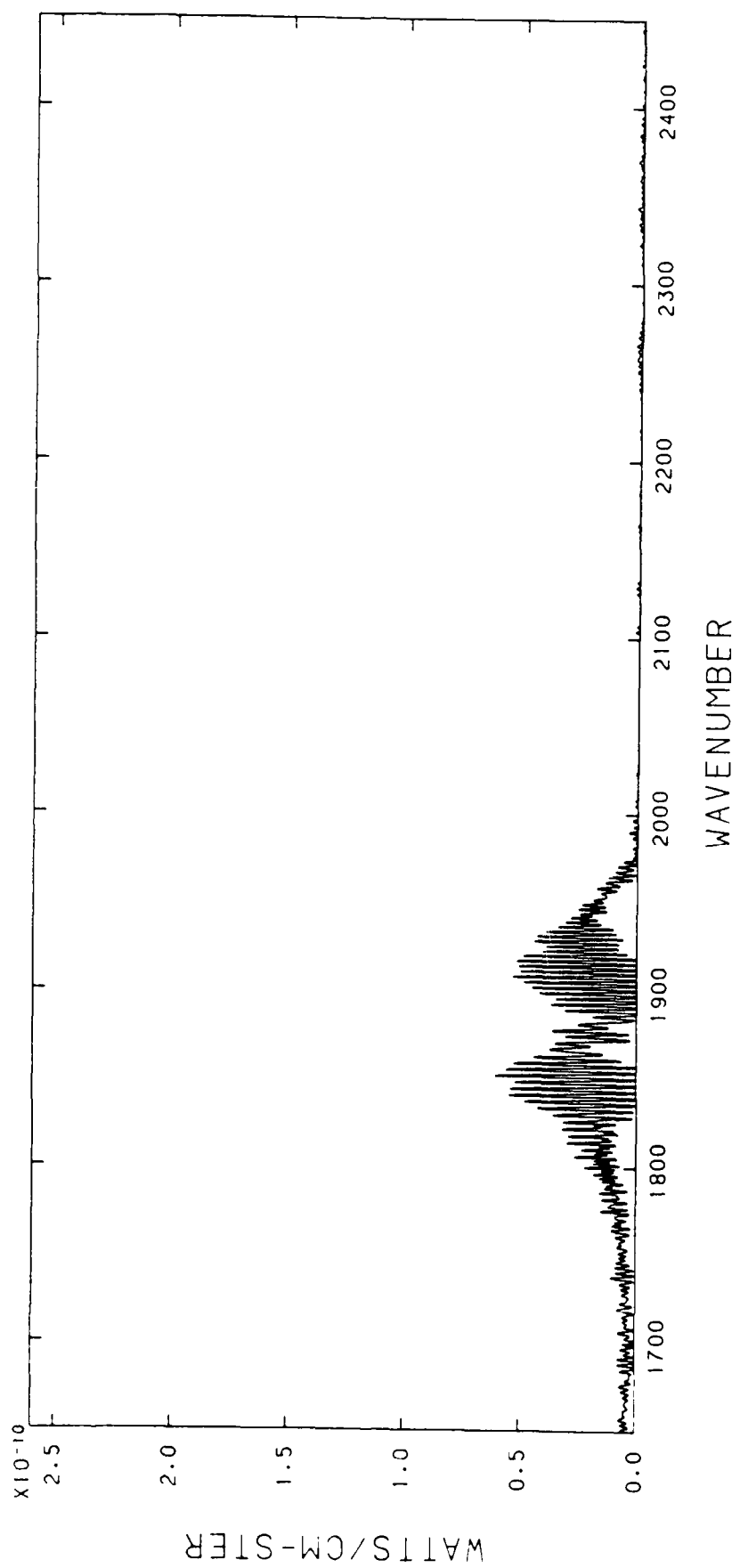


FILE 52, TIME 9: 9: 6.626, ALT 136.7-137.0 KM

24-NOV-83 00:28



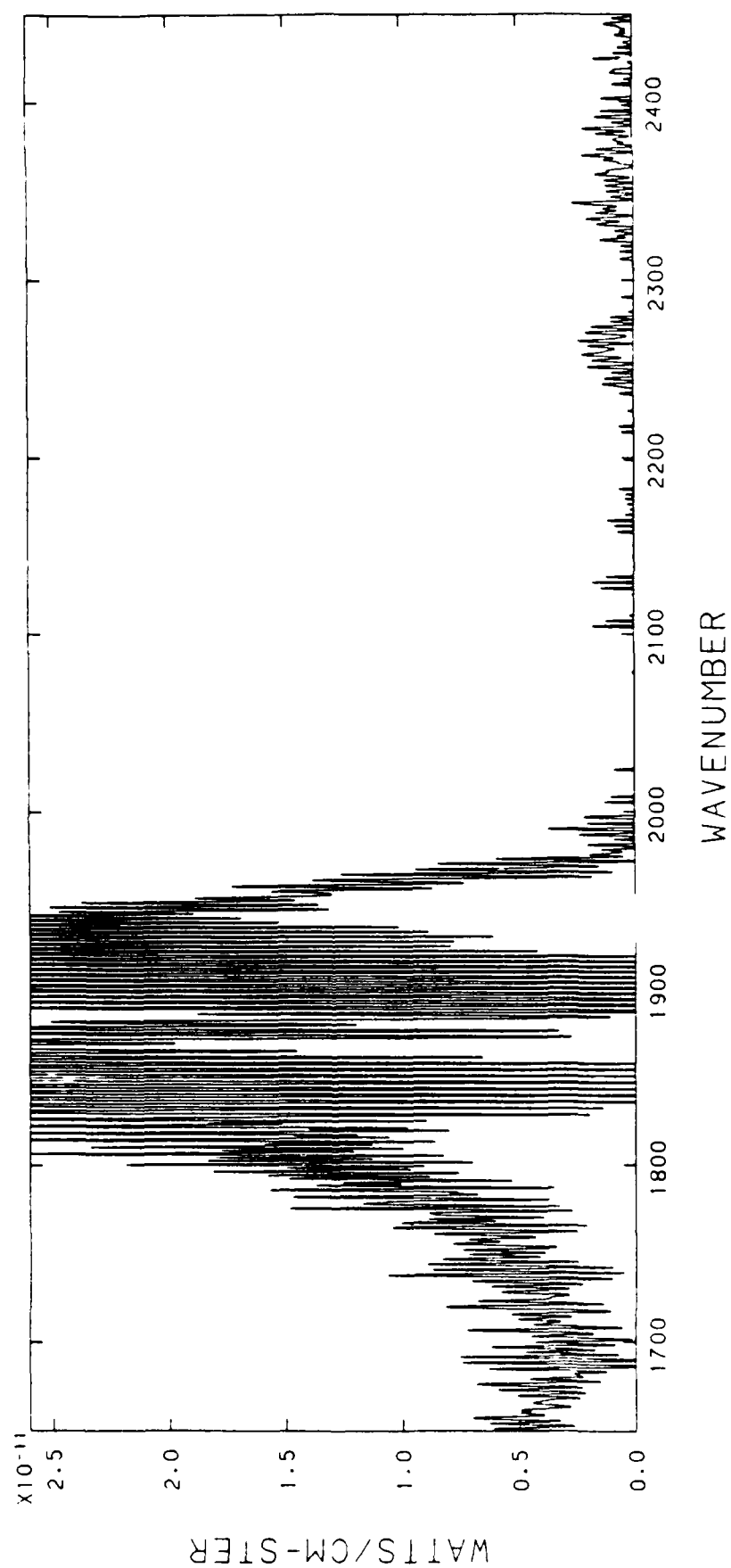
FILE 52, TIME 9: 9: 6.626, ALT 136.7-137.0 KM



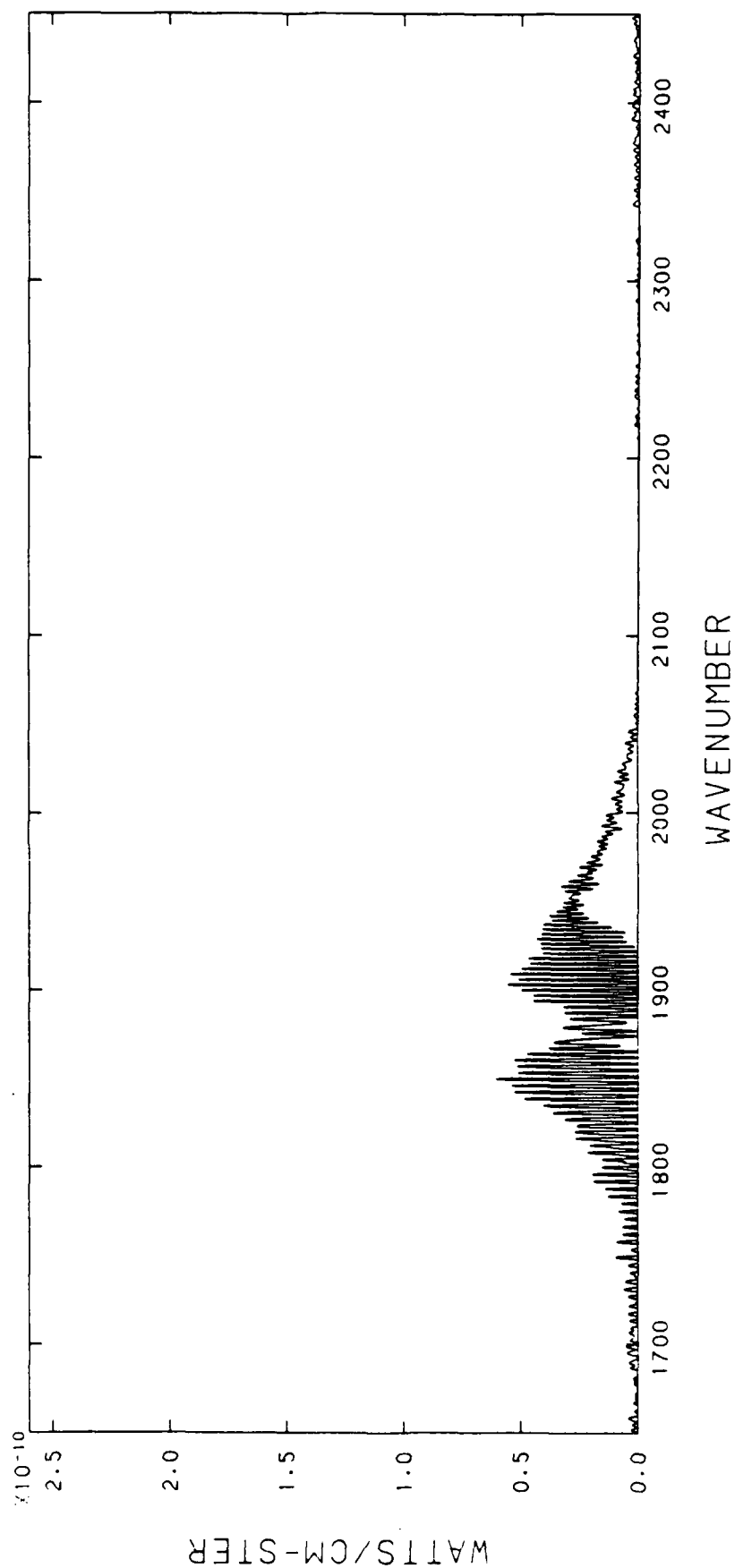
FILE 53, TIME 9: 9: 8. 58, ALT 137.0-137.3 KM

24 NOV-83 00:28



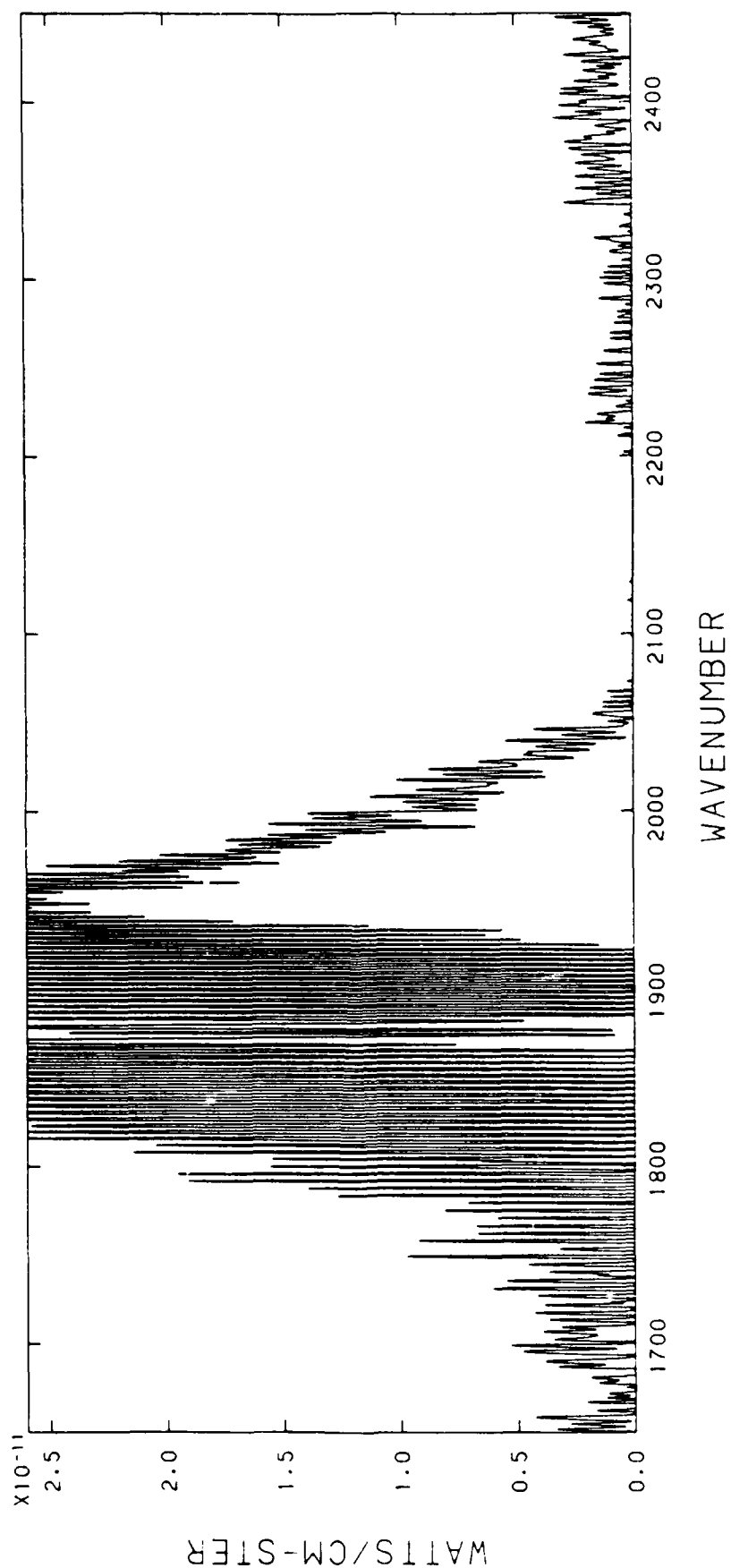


FILE 53, TIME 9: 9: 8. 58, ALT 137.0-137.3 KM



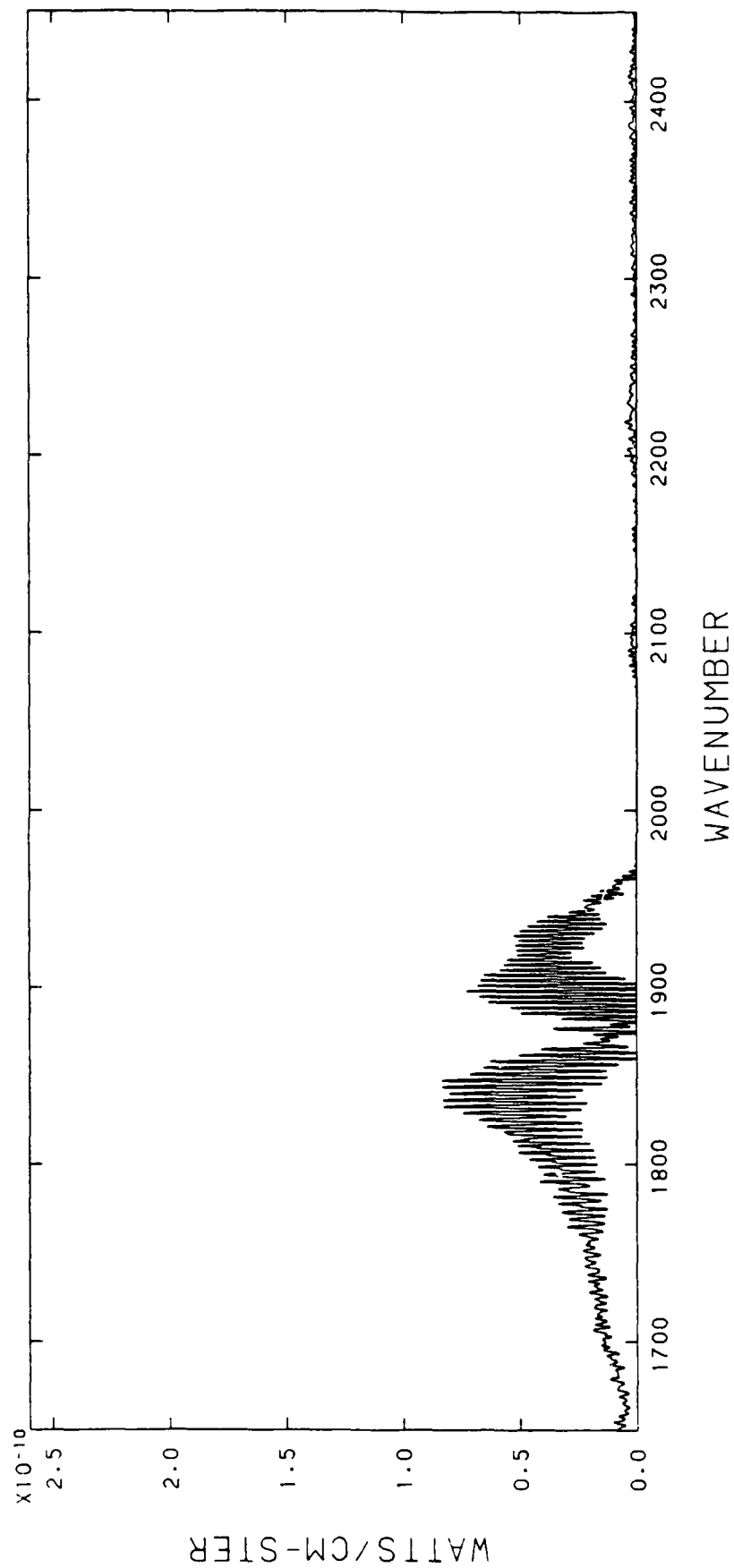
FILE 54, TIME 9: 9: 9.682, ALT 137.3-137.6 KM

24-NOV-83 00:28



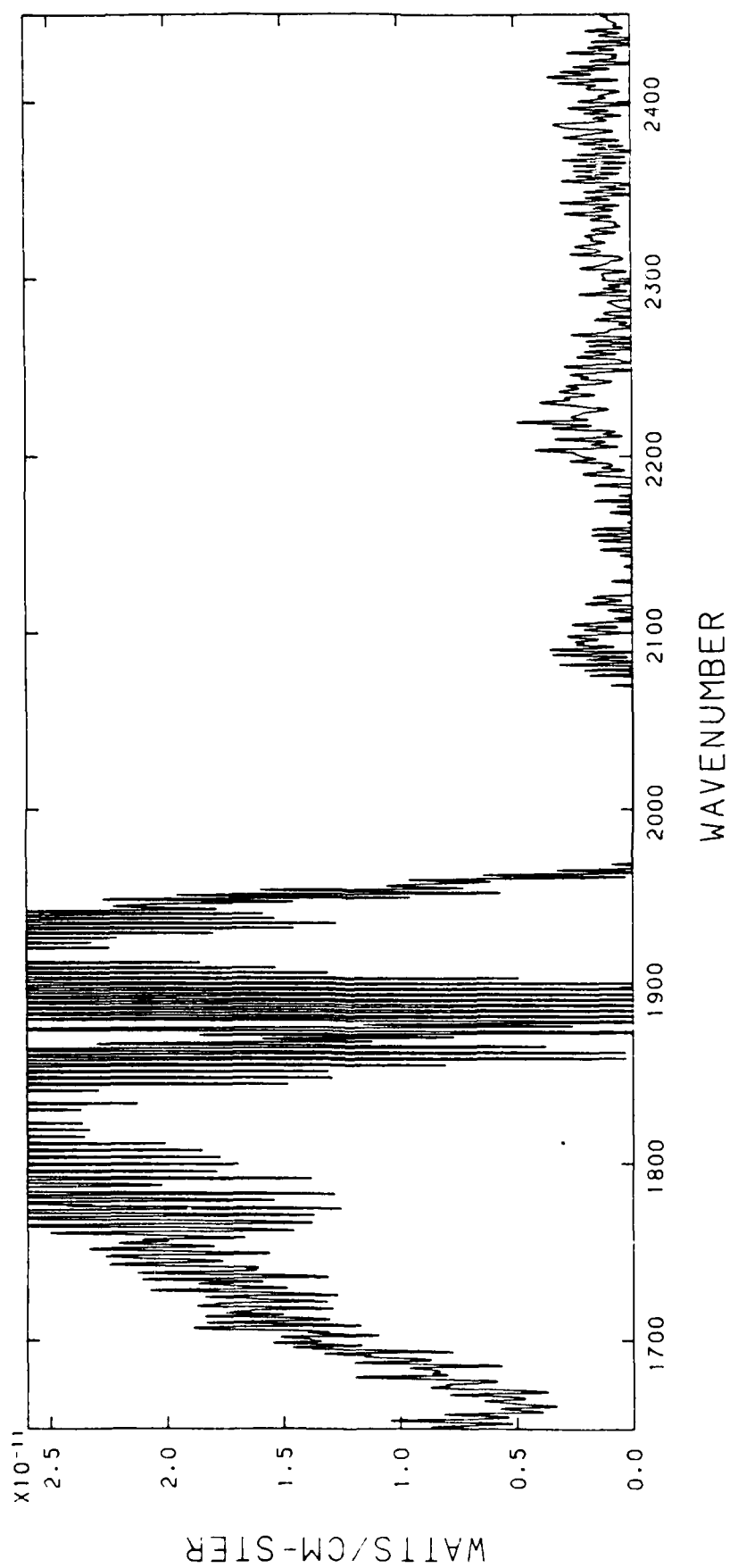
FILE 54, TIME 9: 9: 9.682, ALT 137.3-137.6 KM

24-NOV-83 00:29

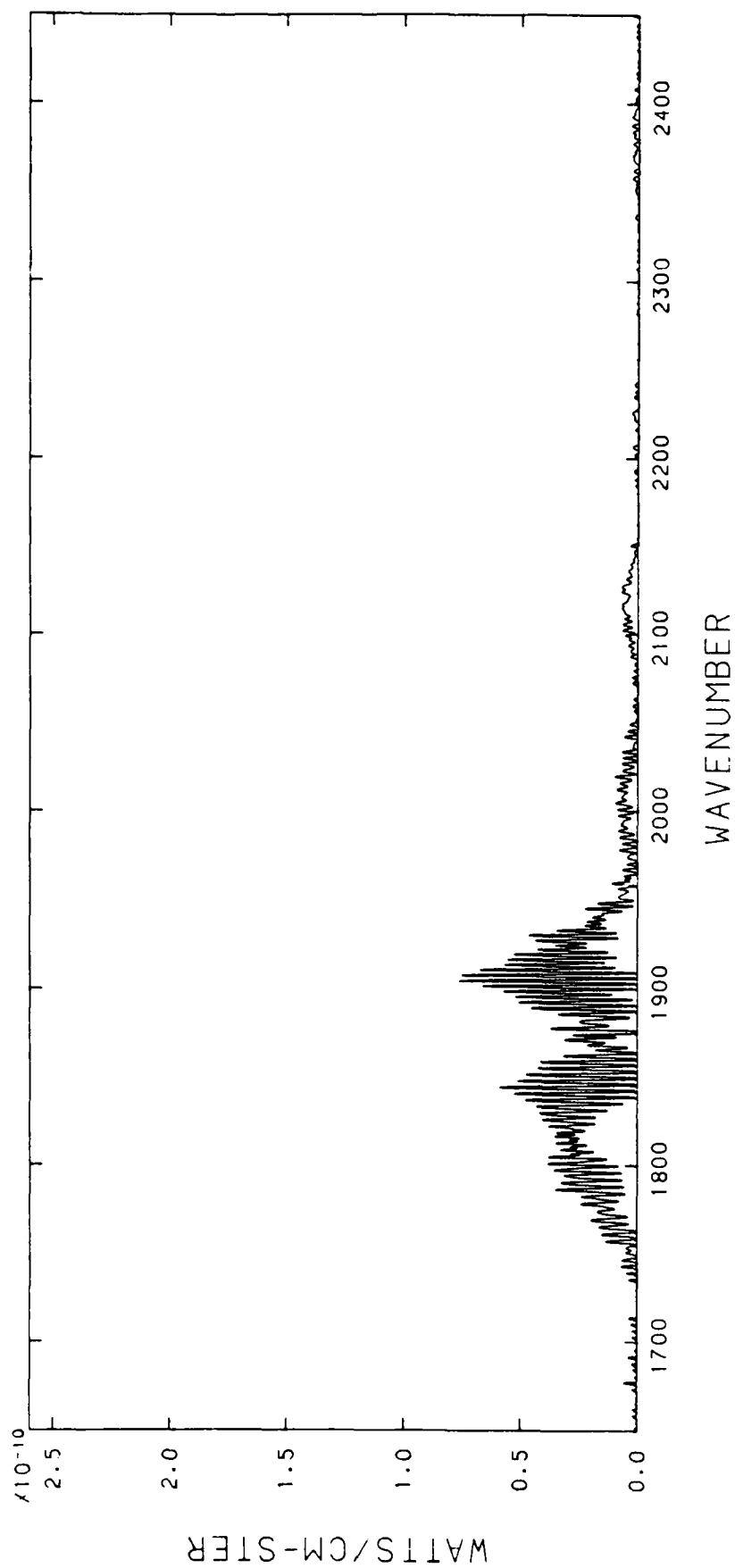


FILE 55, TIME 9: 9:11.308, ALT 137.6-137.9 KM

24-NOV-83 00:29

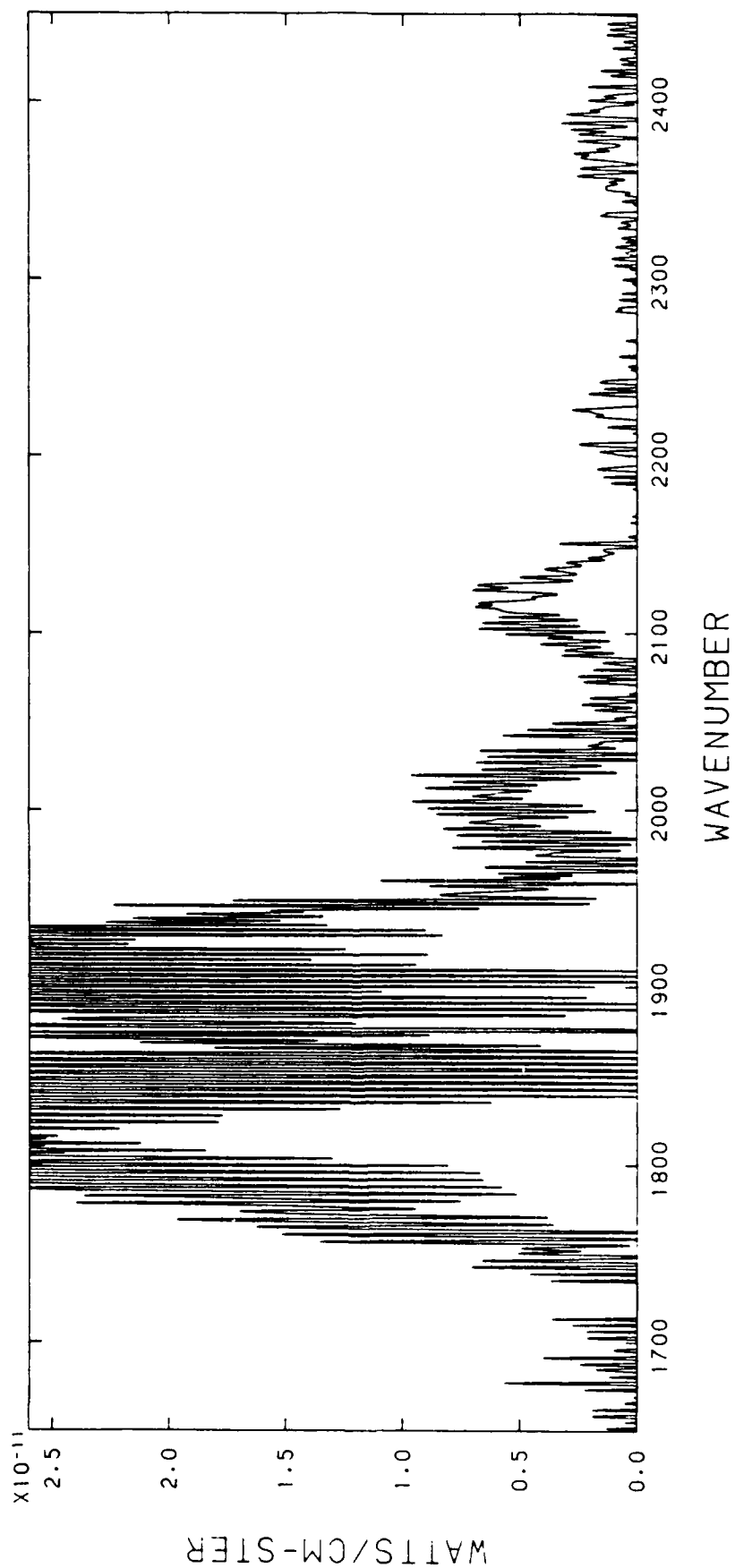


FILE 55, TIME 9: 9:11.308, ALT 137.6-137.9 KM

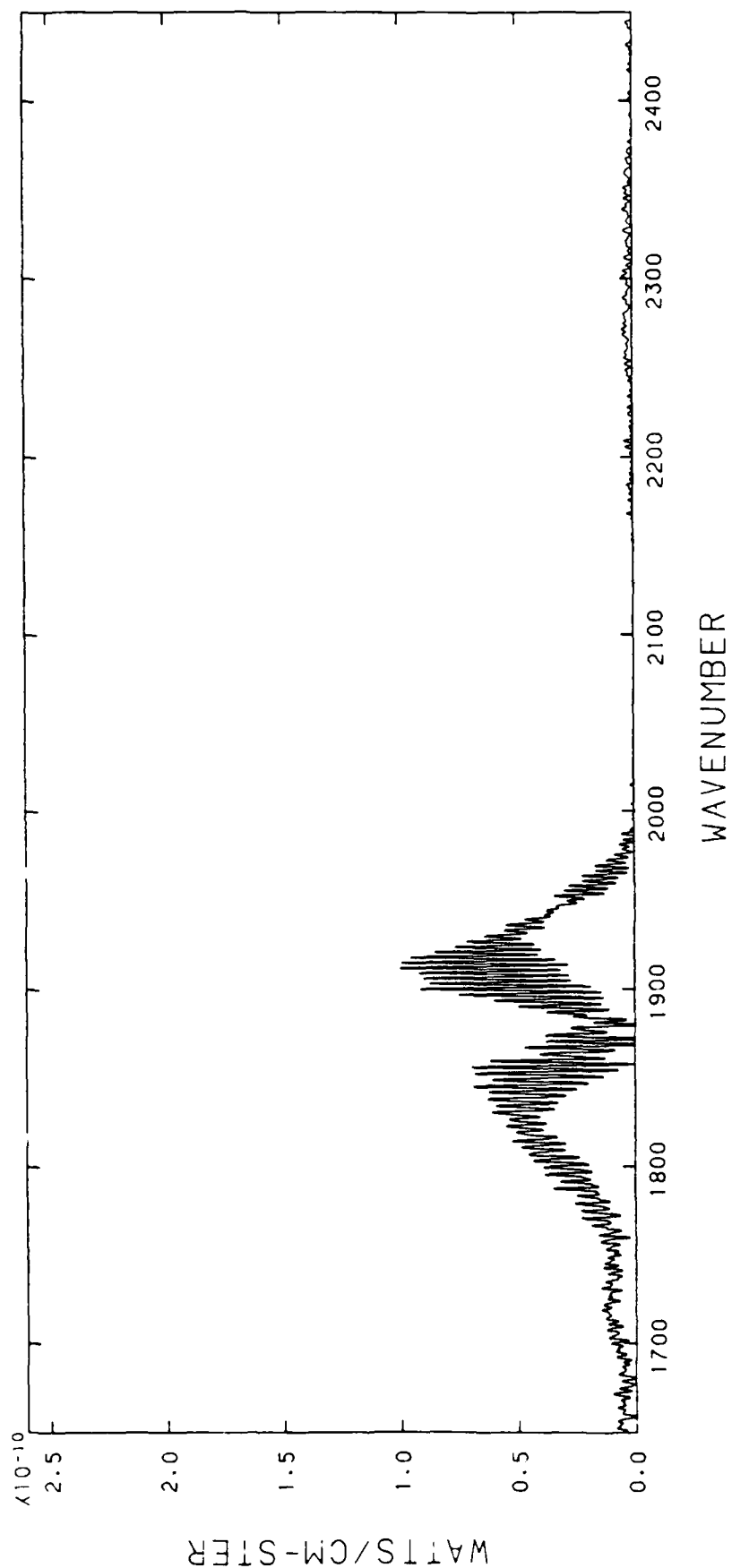


FILE 56, TIME 9: 9:12.930, ALT 137.9-138.1 KM

24-NOV-83 00.29



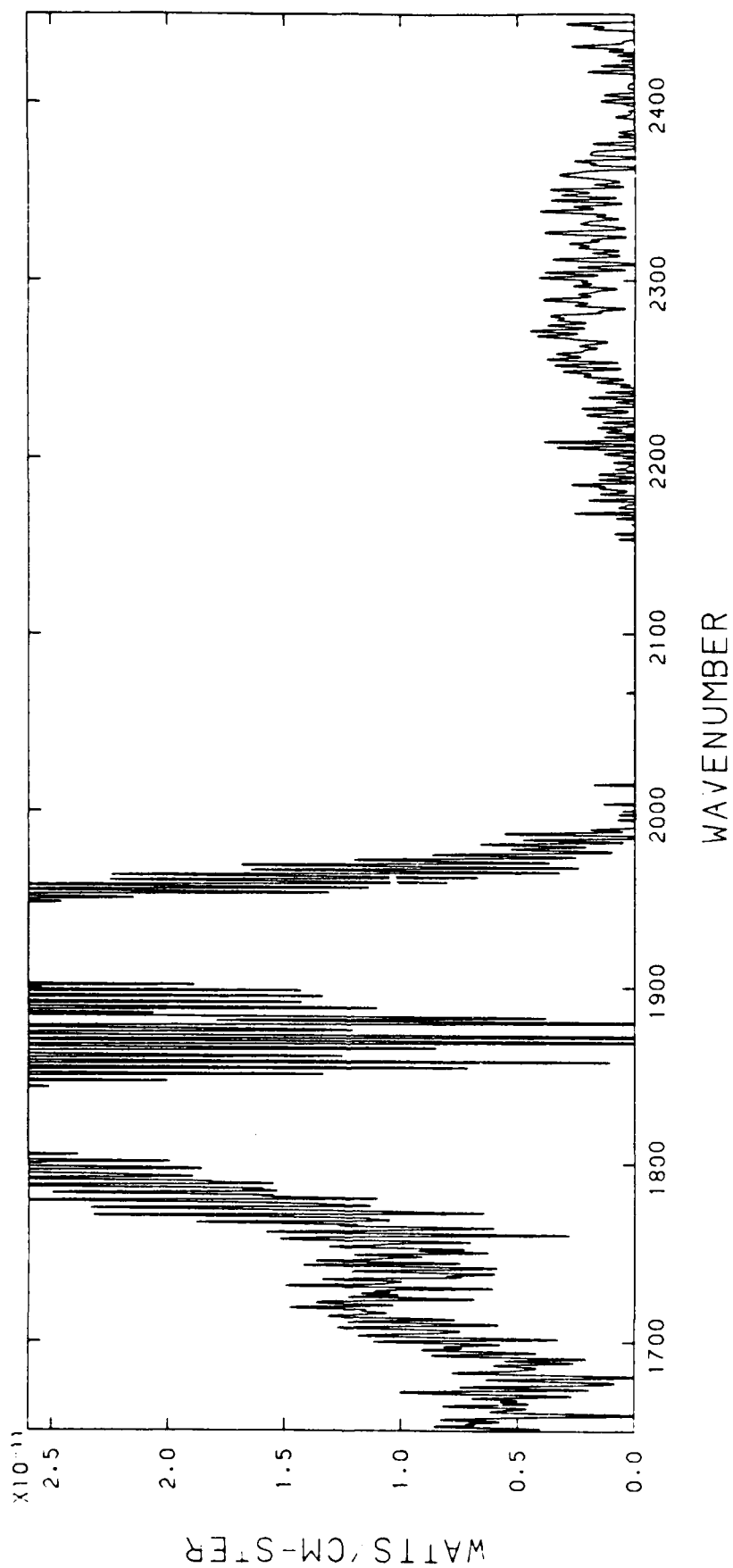
FILE 56, TIME 9: 9:12.930, ALT 137.9-138.1 KM



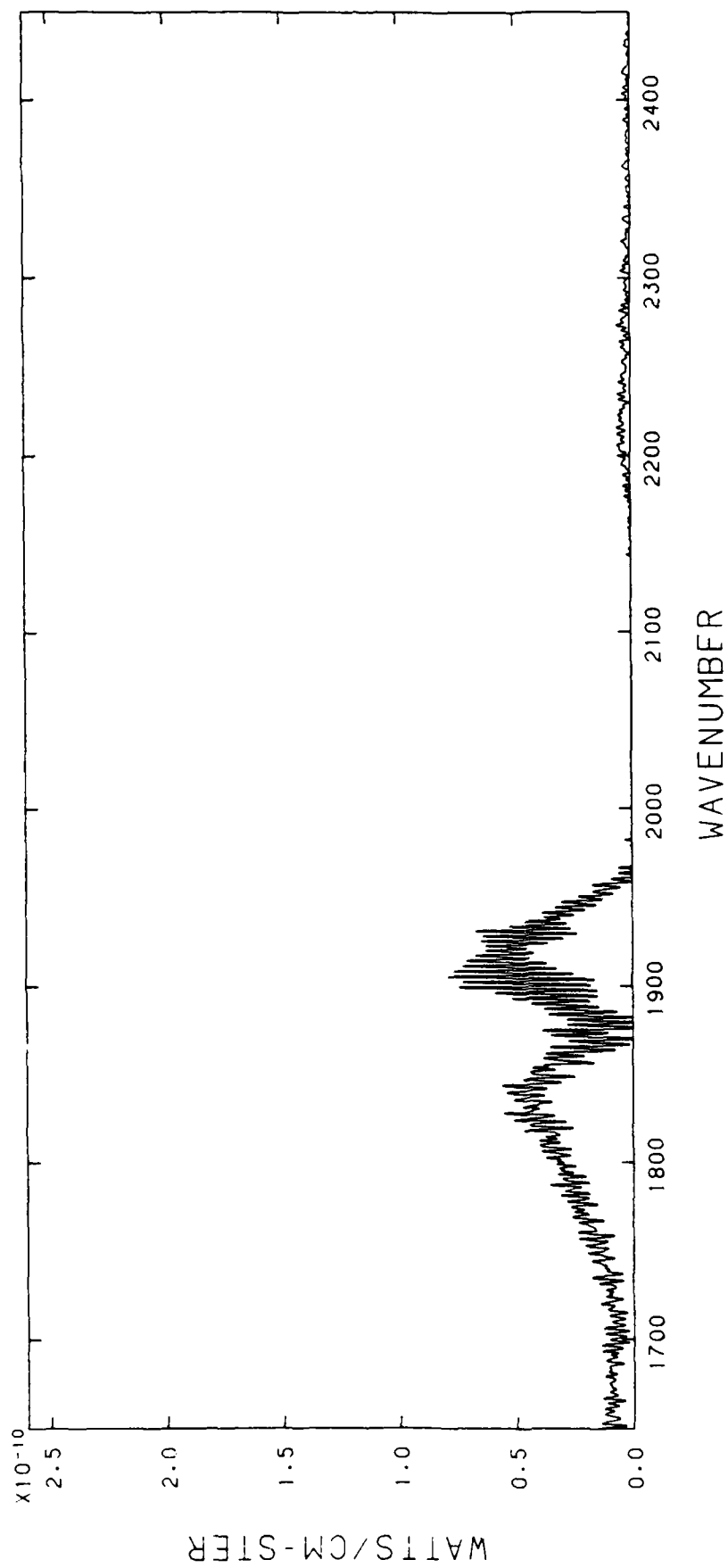
FILE 57, TIME 9: 9:14.556, ALT 138.1-138.4 KM

24-NOV-83 00:29



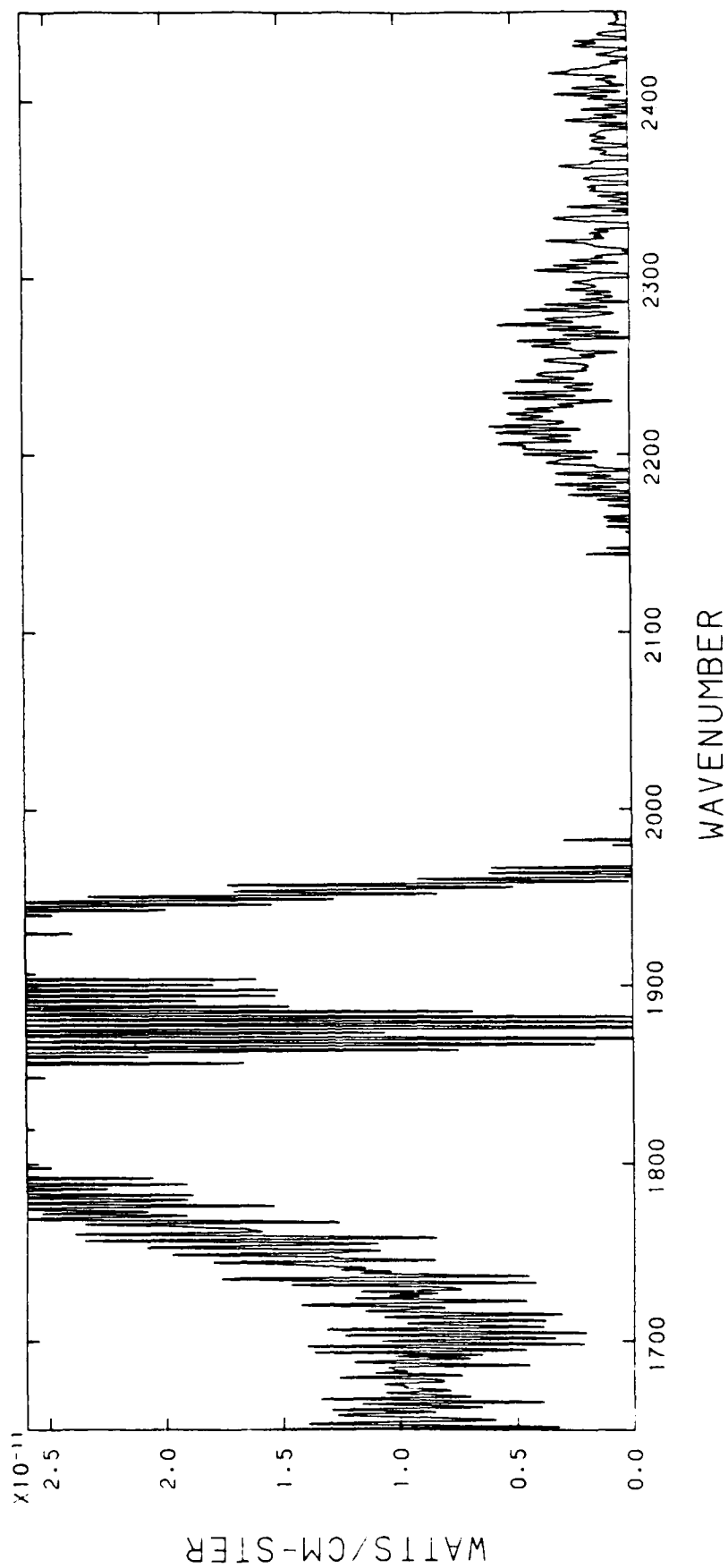


FILE 57, TIME 9: 9:14.556, ALT 138.1-138.4 KM

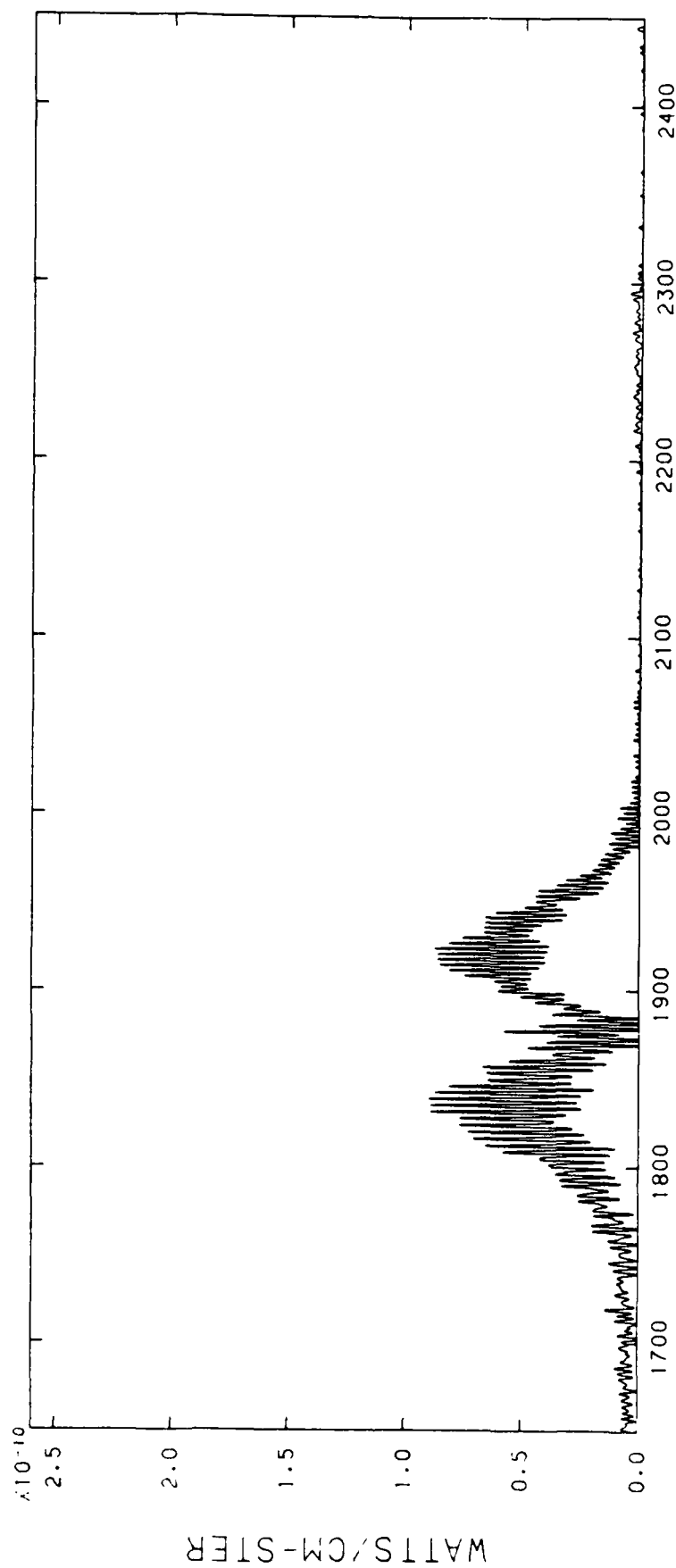


FILE 58, TIME 9: 9:16.180, ALT 138.4-138.6 KM

24-NOV-83 00:29



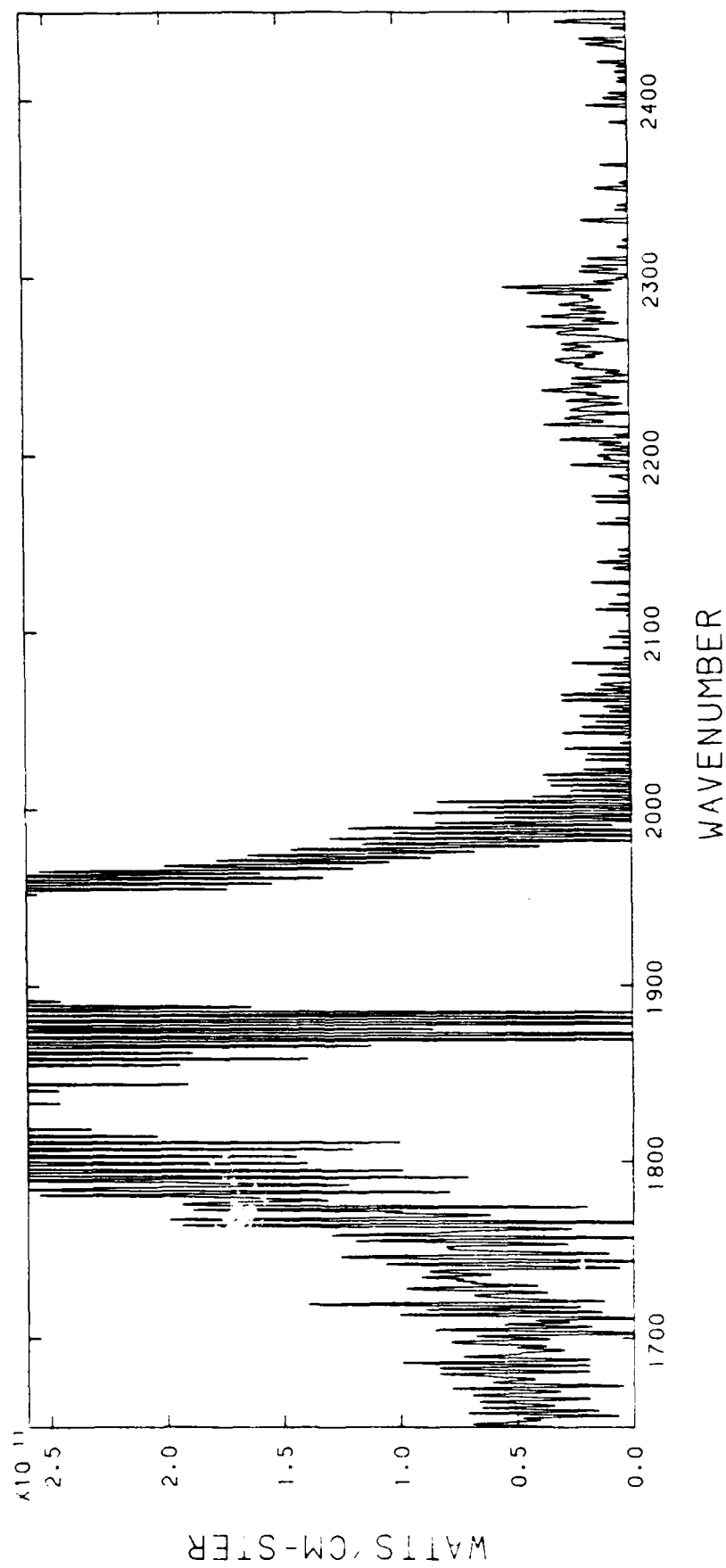
FILE 58, TIME 9: 9:16.180, ALT 138.4-138.6 KM



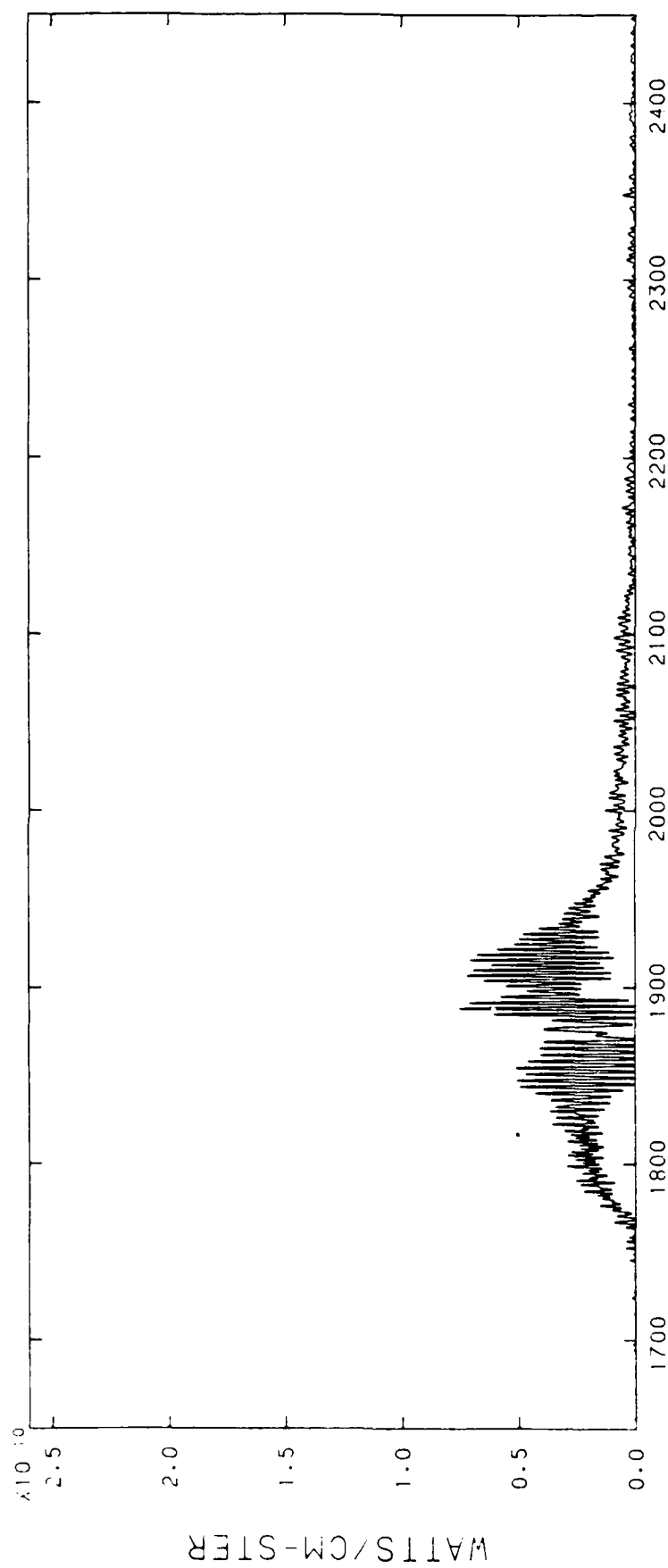
WAVENUMBER

FILE 59, TIME 9: 9:17.806, ALT 138.6-138.8 KM

24-NOV-83 00:29



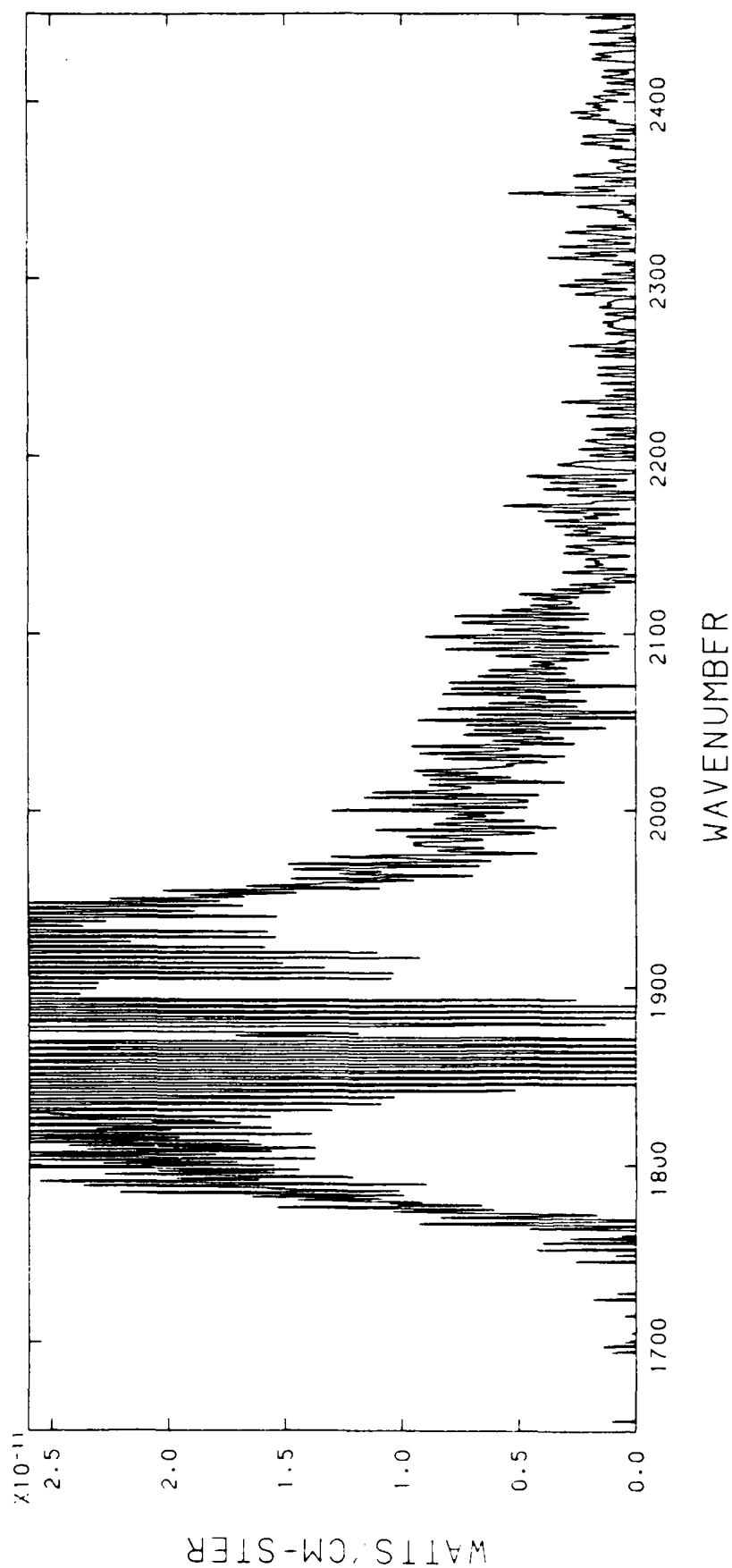
FILE 59, TIME 9: 9:17.806, ALT 138.6-138.8 KM



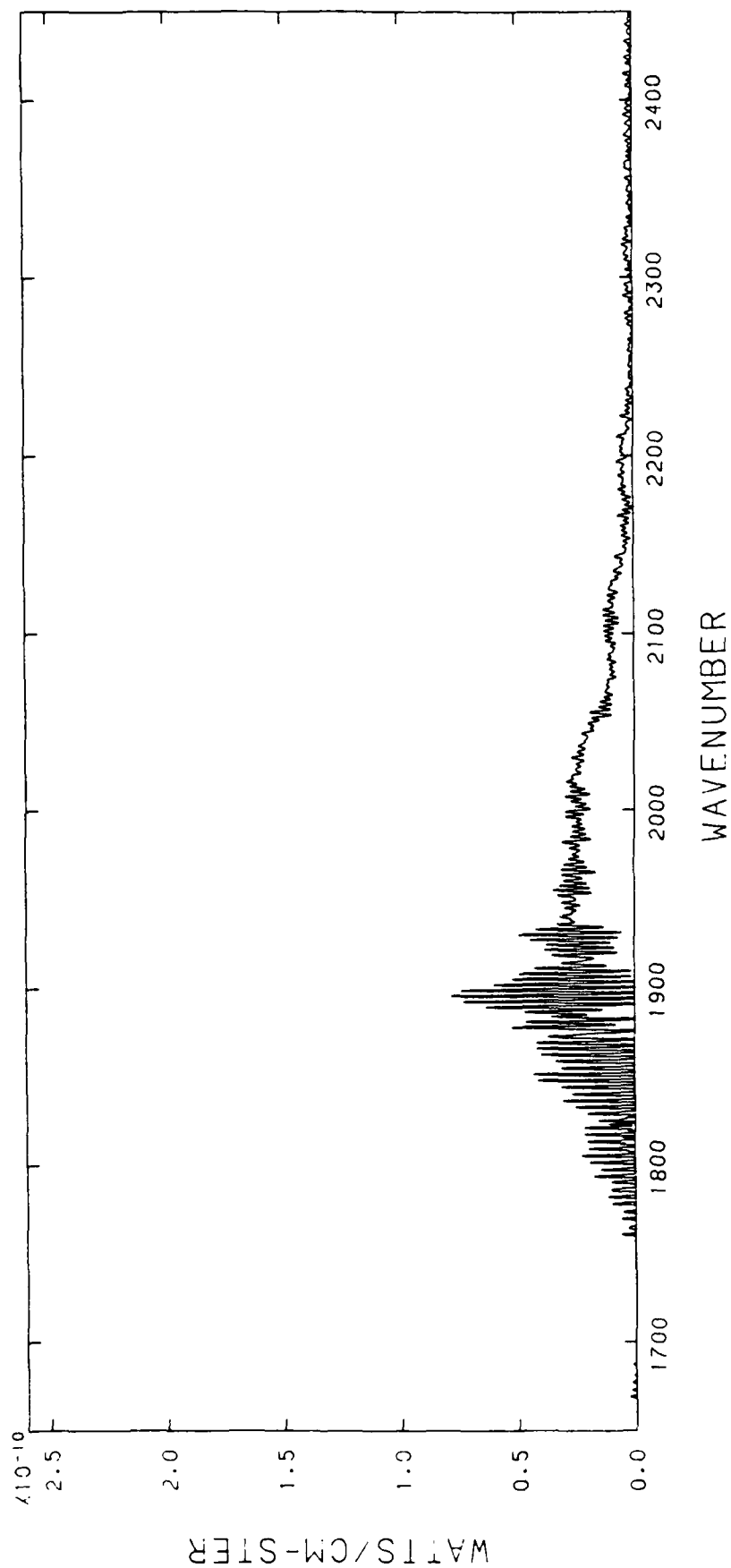
WAVENUMBER

FILE 60, TIME 9: 19.428, ALT 138.8-138.9 KM

24-NOV-83 00:30



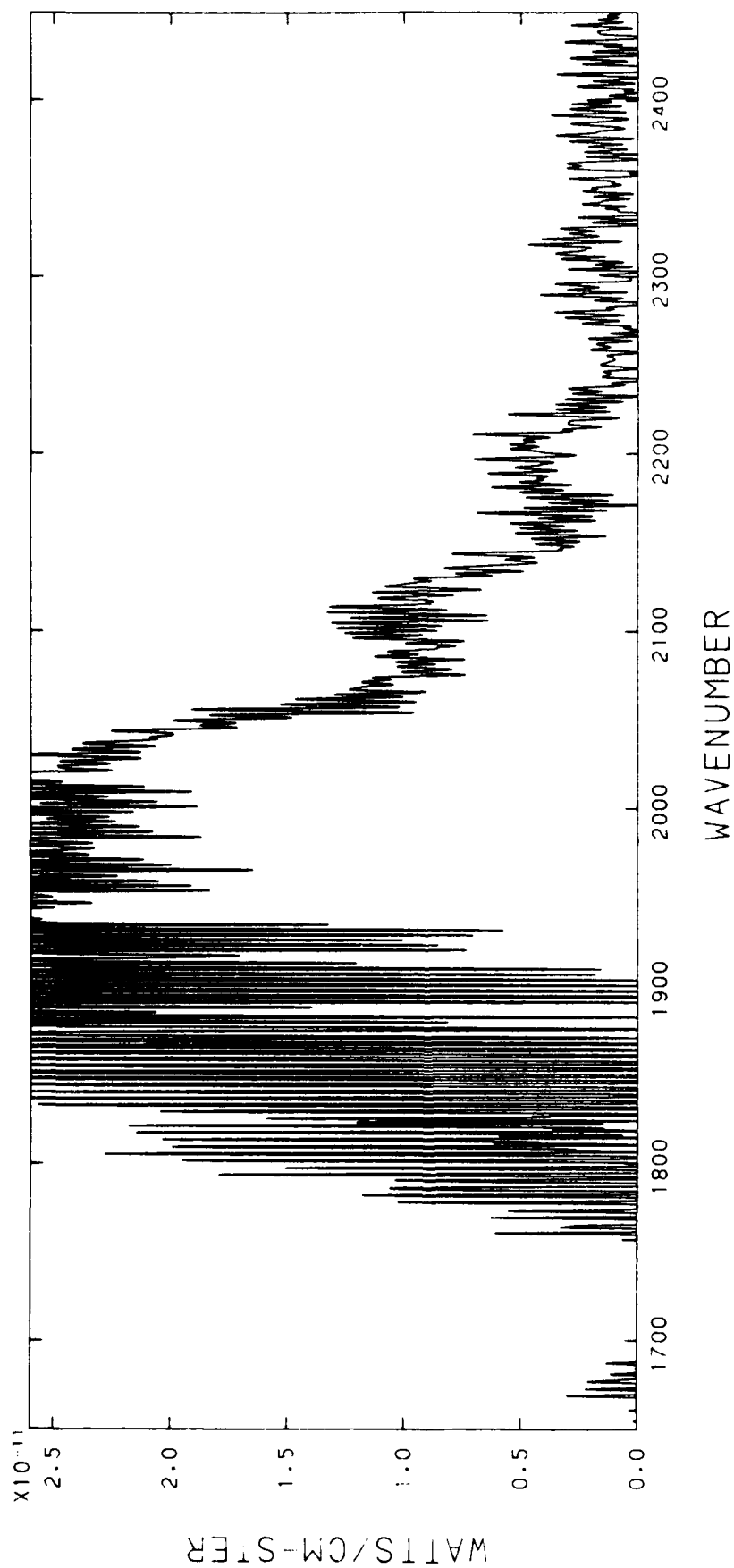
FILE 60, TIME 9: 9:19.428, ALT 138.8-138.9 KM



FILE 61, TIME 9: 9:21. 54, ALT 138.9-139.0 KM

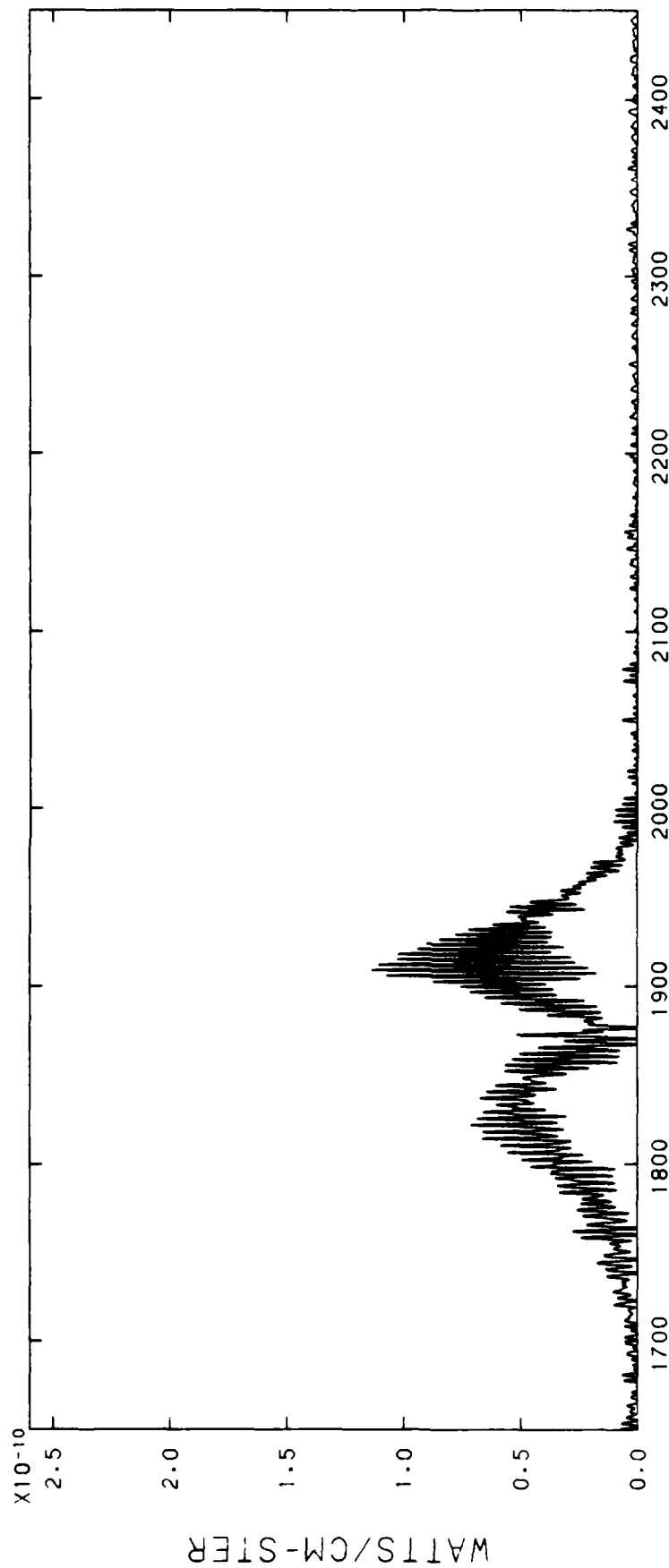
24-NOV-83 00:30





FILE 61, TIME 9: 9:21. 54, ALT 138.9-139.0 KM

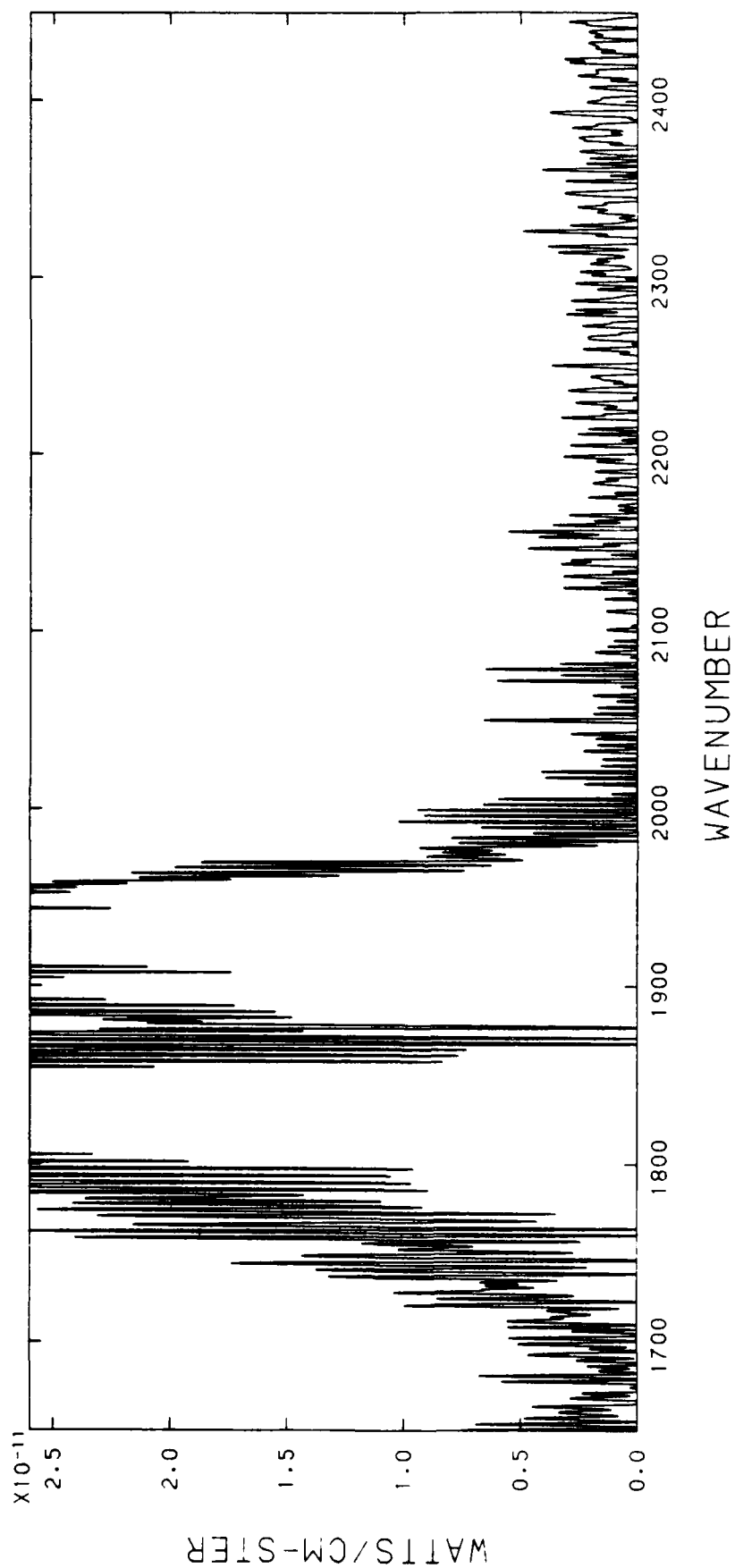
24-NOV-83 00:30



WAVENUMBER

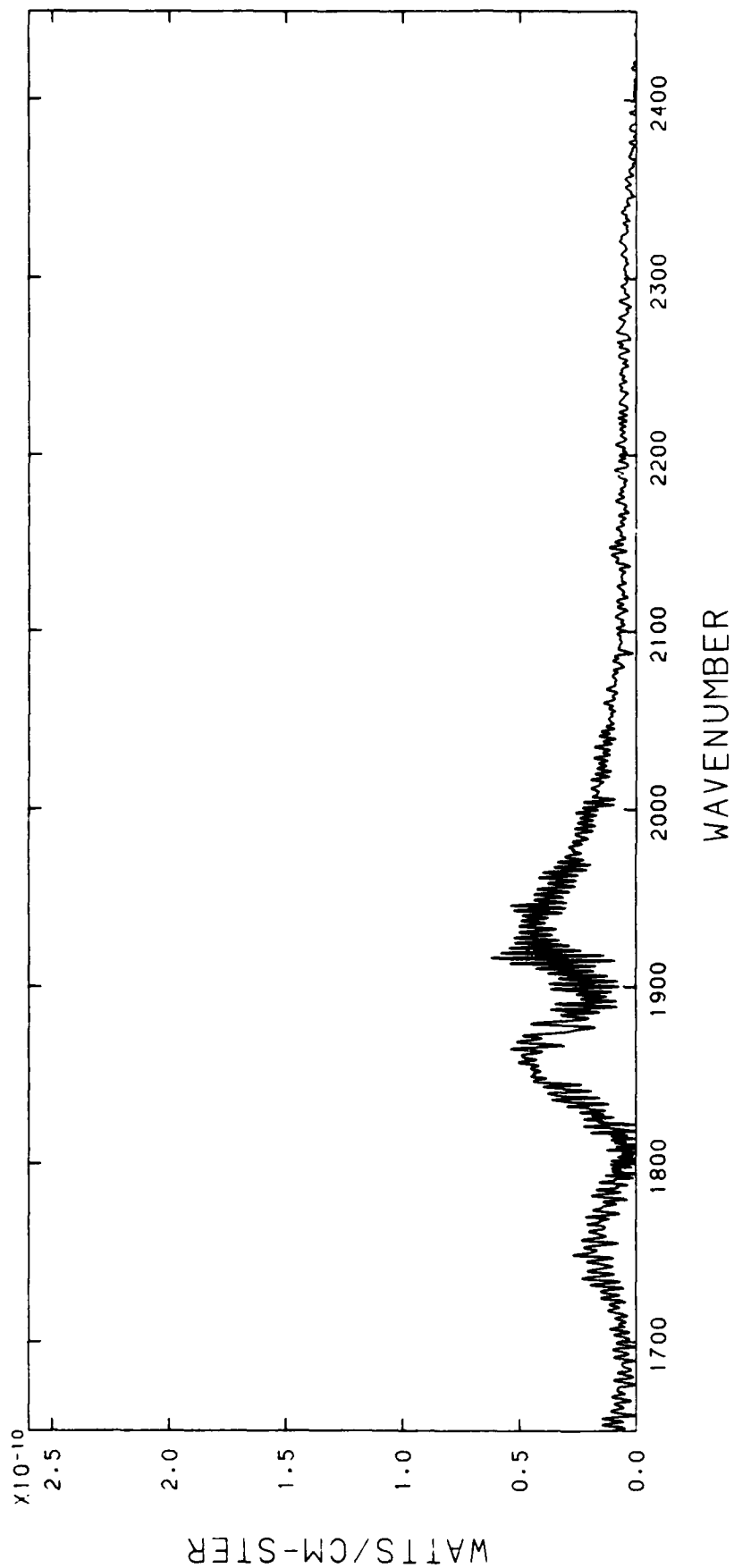
FILE 62, TIME 9: 9:22.680, ALT 139.0-139.1 KM

24-NOV-83 00:30



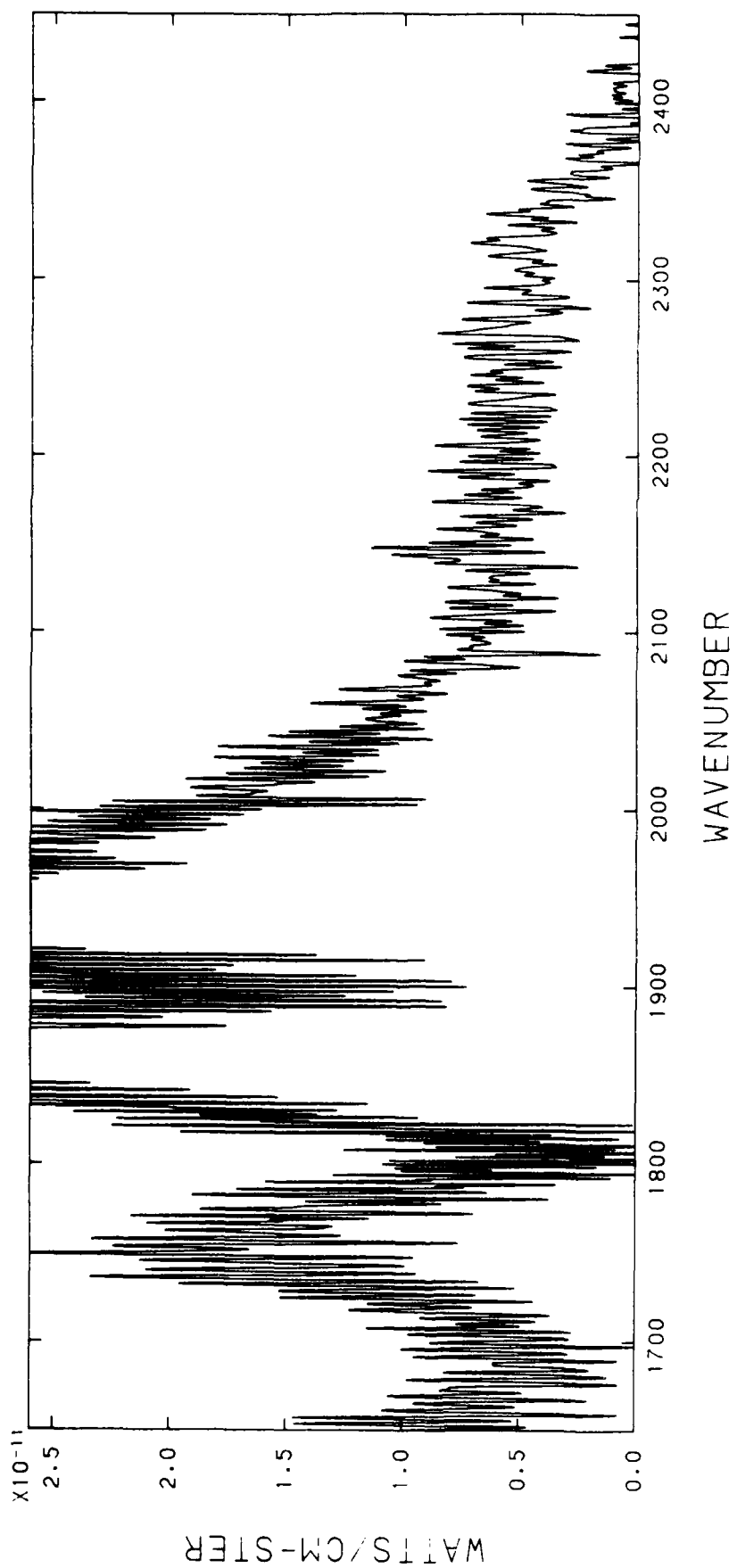
FILE 62, TIME 9: 9:22.680, ALT 139.0-139.1 KM

24-NOV-83 00:30



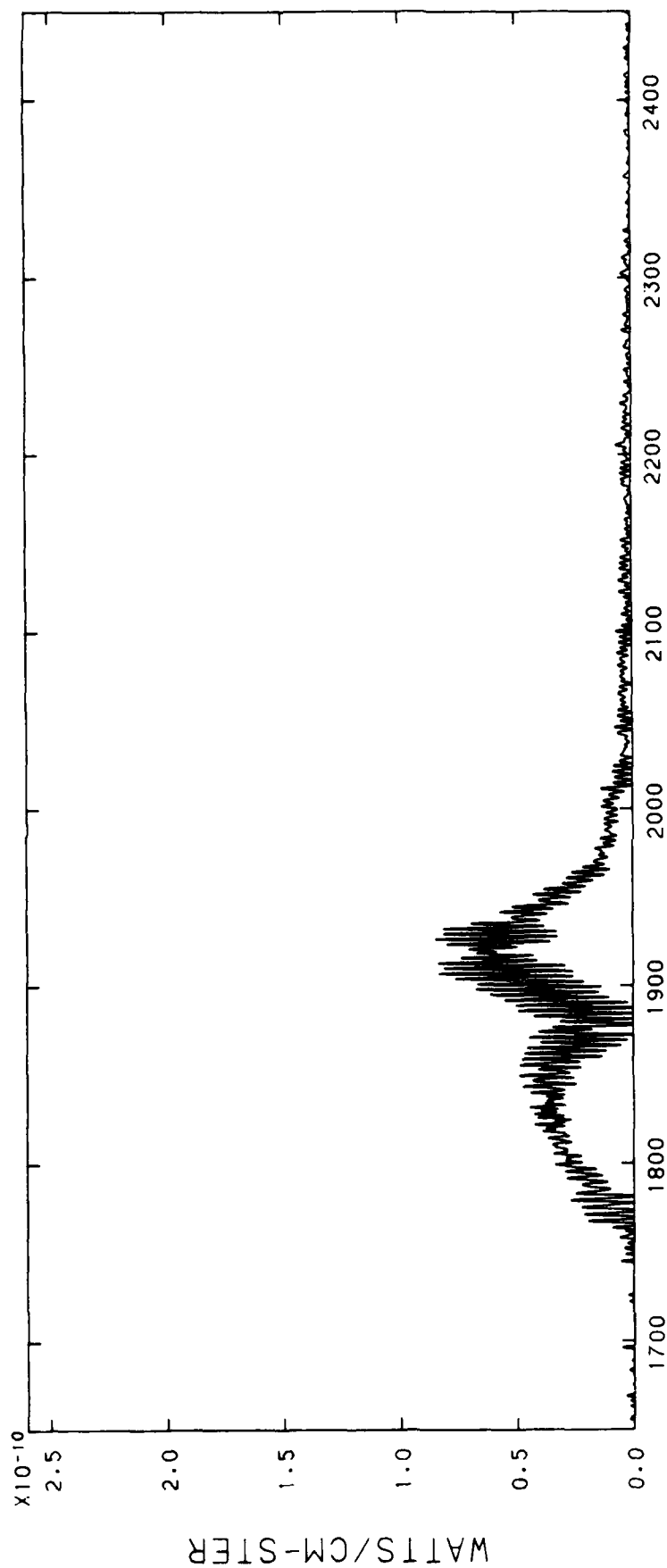
FILE 63, TIME 9: 9:24.306, ALT 139.1-139.2 KM

24-NOV-83 00:30



FILE 63, TIME 9: 9:24.306, ALT 139.1-139.2 KM

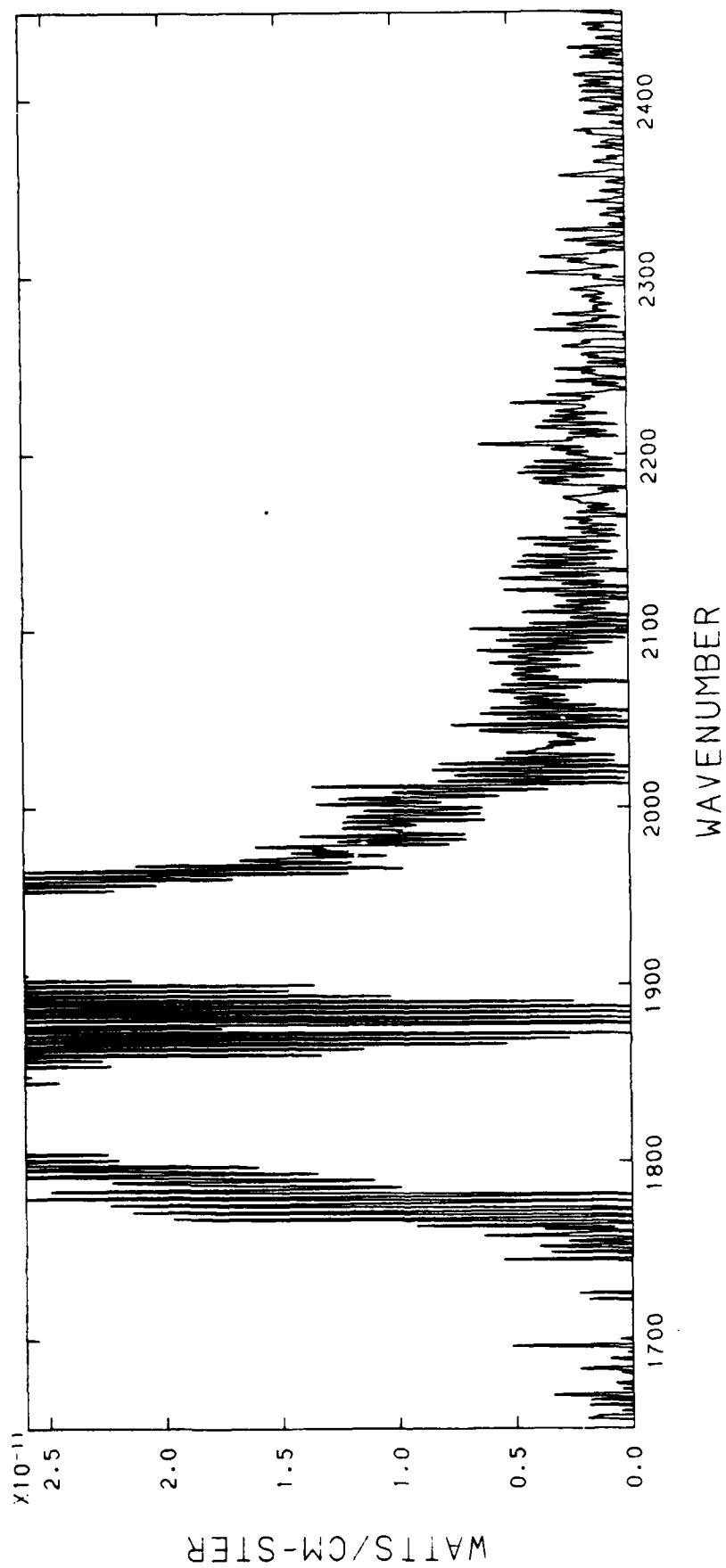
24-NOV-83 00:30



WAVENUMBER

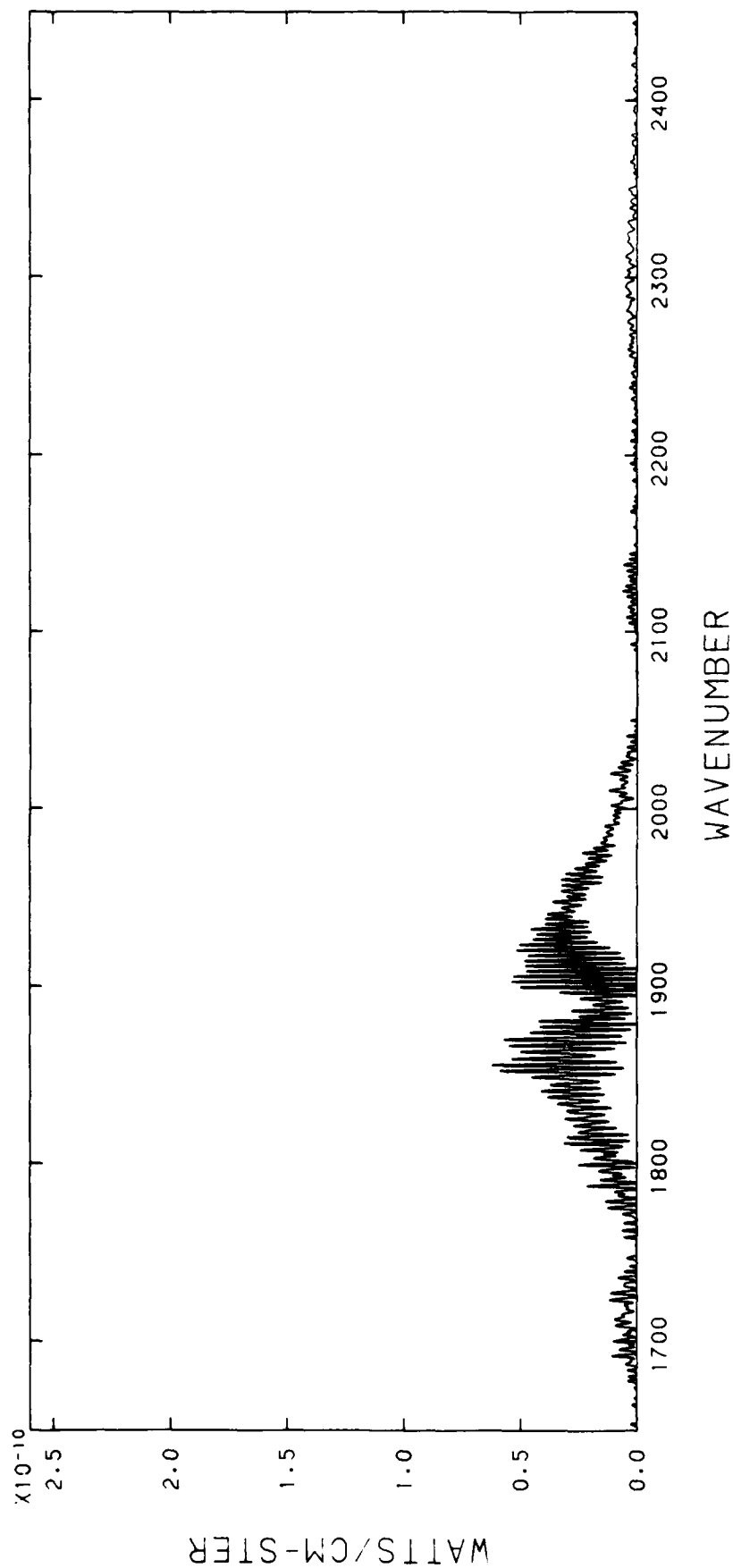
FILE 64, TIME 9: 9:25.930, ALT 139.2-139.3 KM

24- NOV-83 00:30



FILE 64, TIME 9: 9:25.930, ALT 139.2-139.3 KM

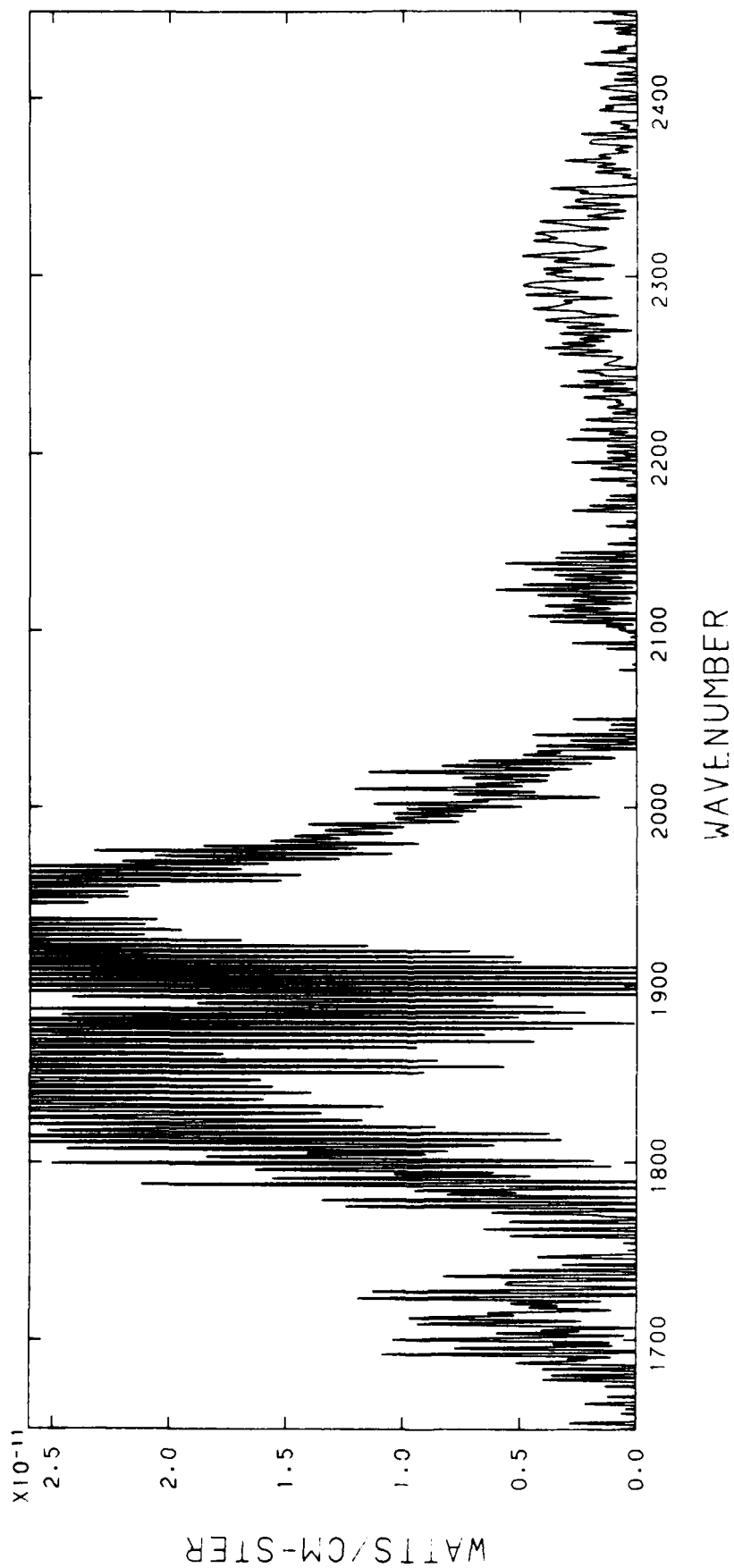
24-NOV-83 00:30



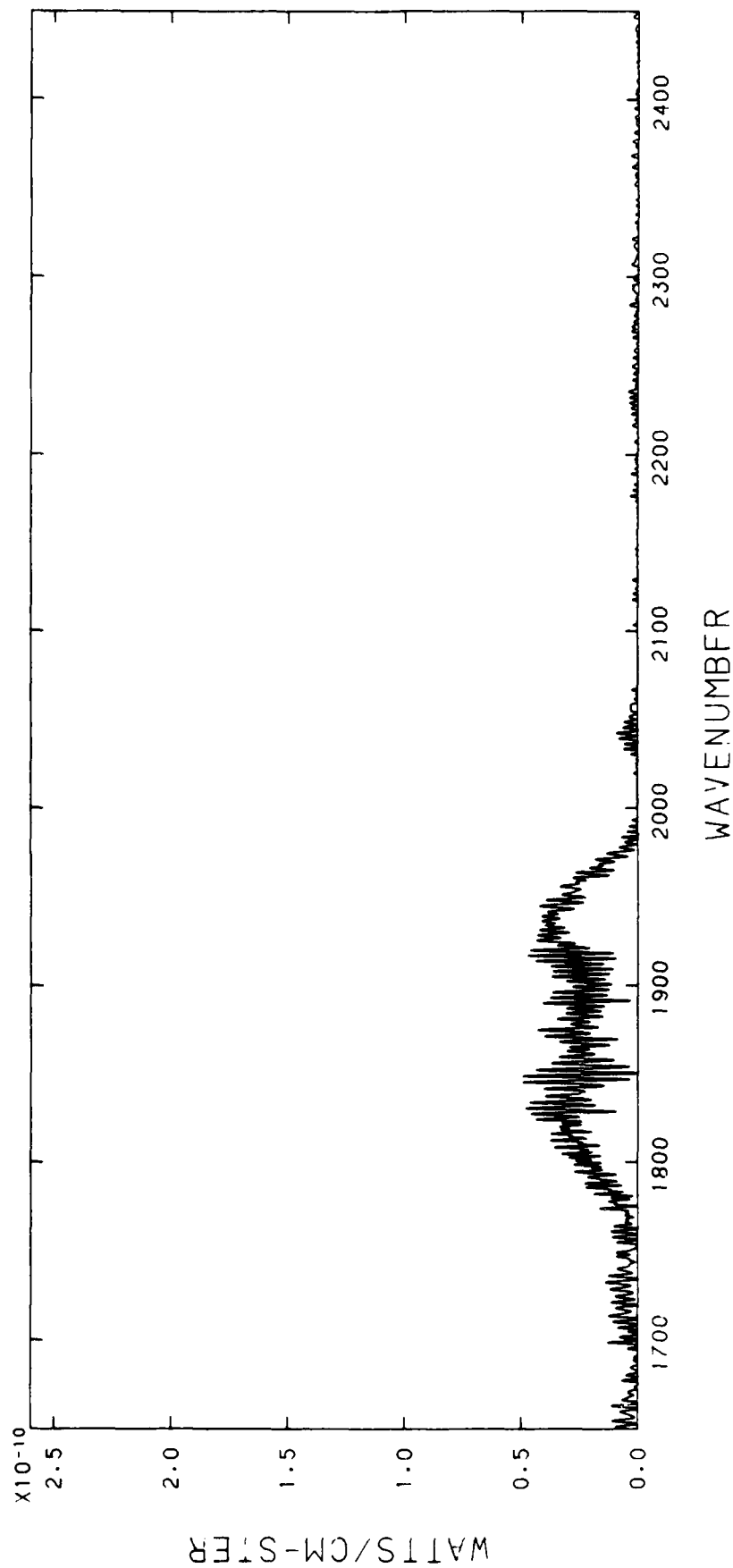
FILE 65, TIME 9: 9:27.558, ALT 139.3-139.3 KM

24-NOV-83 00:30



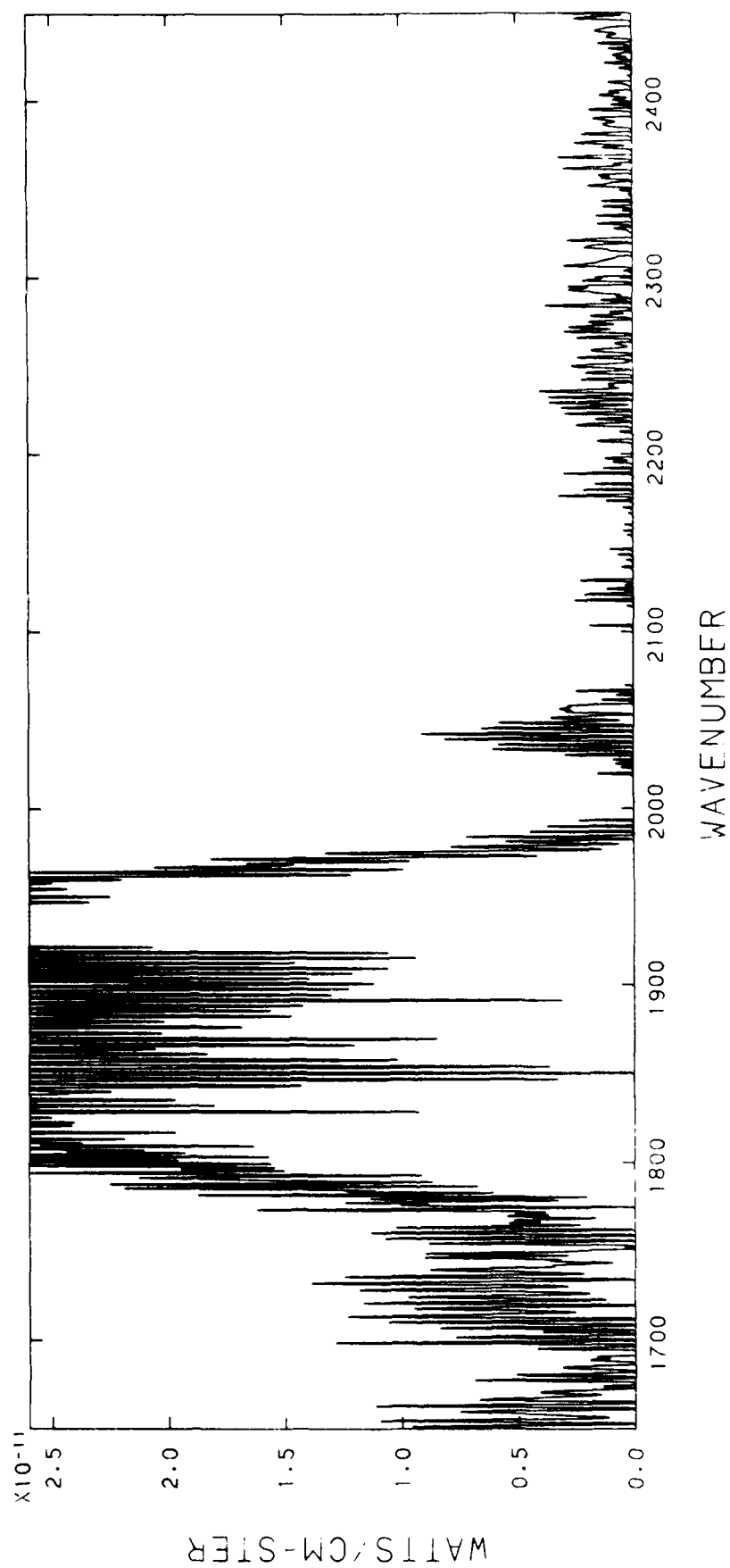


FILE 65, TIME 9: 9:27.558, ALT 139.3-139.3 KM



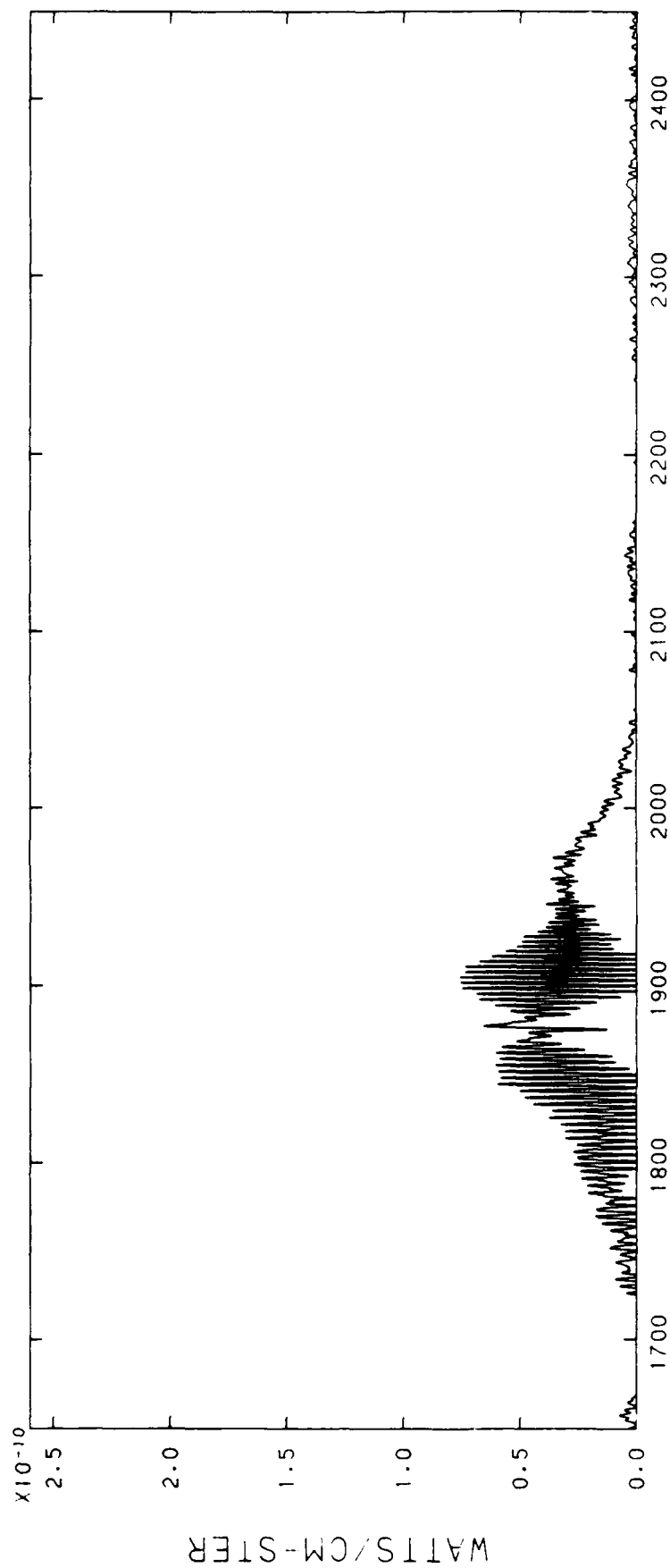
FILE 66, TIME 9: 9:29.202, ALT 139.3-139.3 KM

24-NOV-83 00:31



FILE 66, TIME 9: 9:29.202, ALT 139.3-139.3 KM

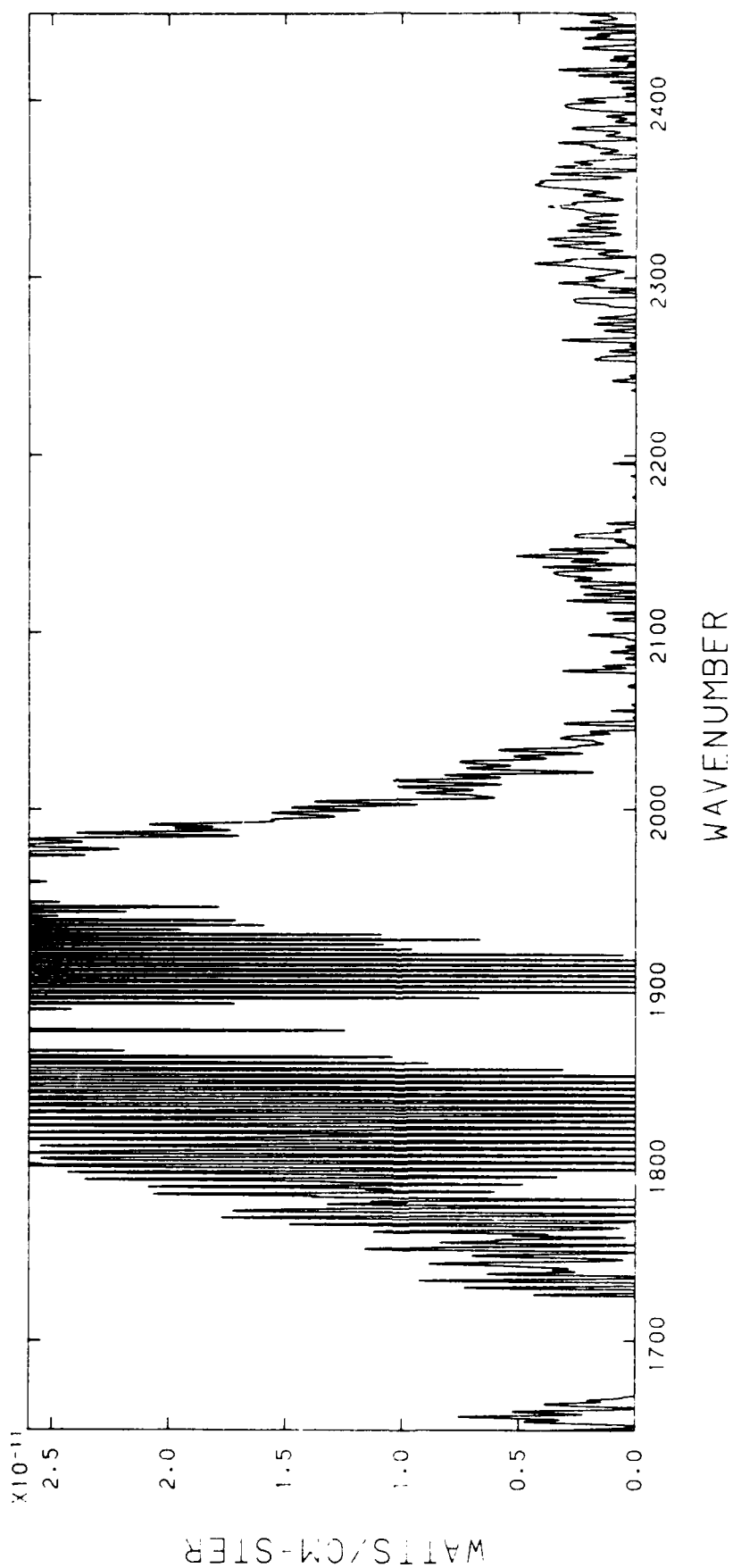
24 NOV-83 00:31



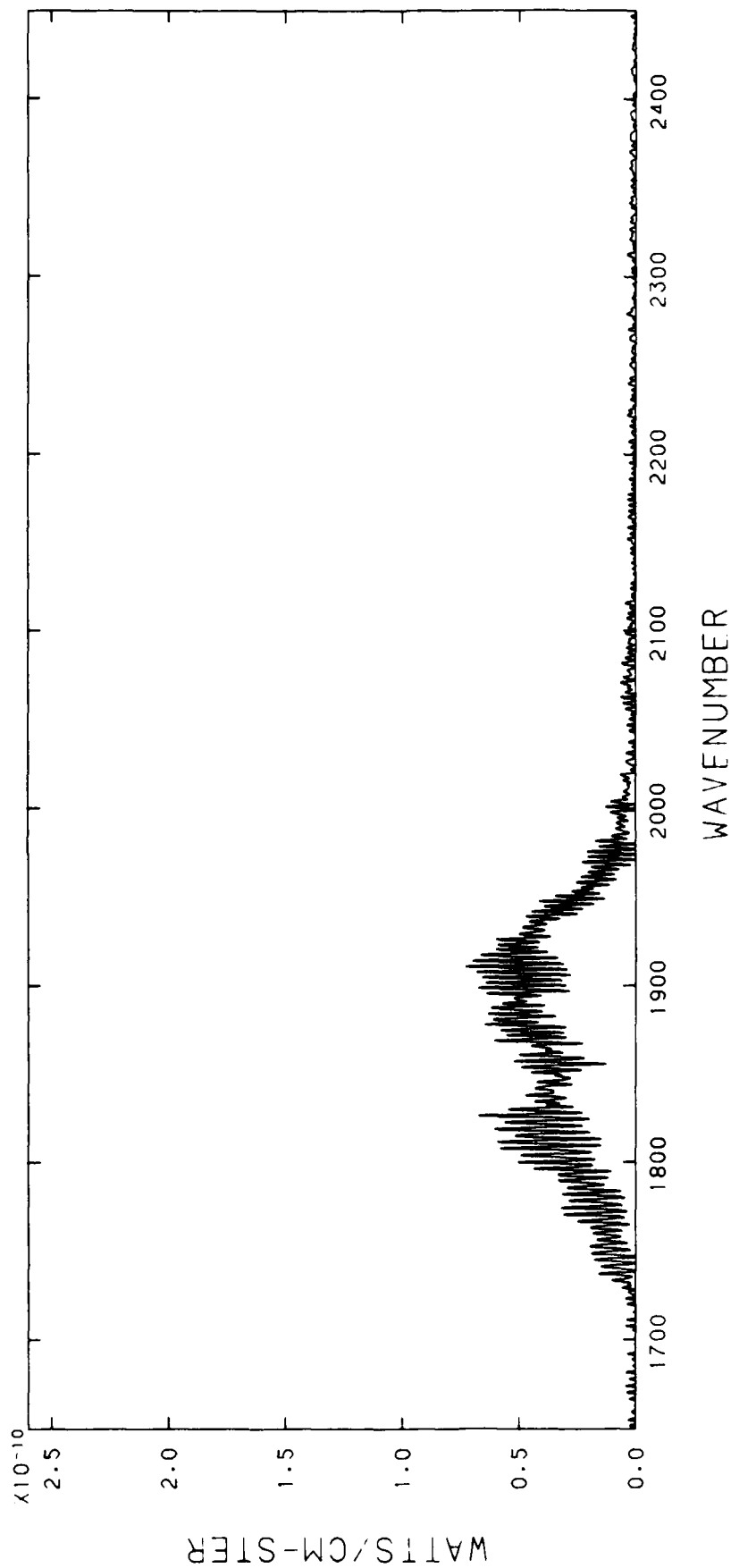
WAVENUMBER

FILE 67, TIME 9: 9:30.852, ALT 139.3-139.3 KM

24-NOV-83 00:31

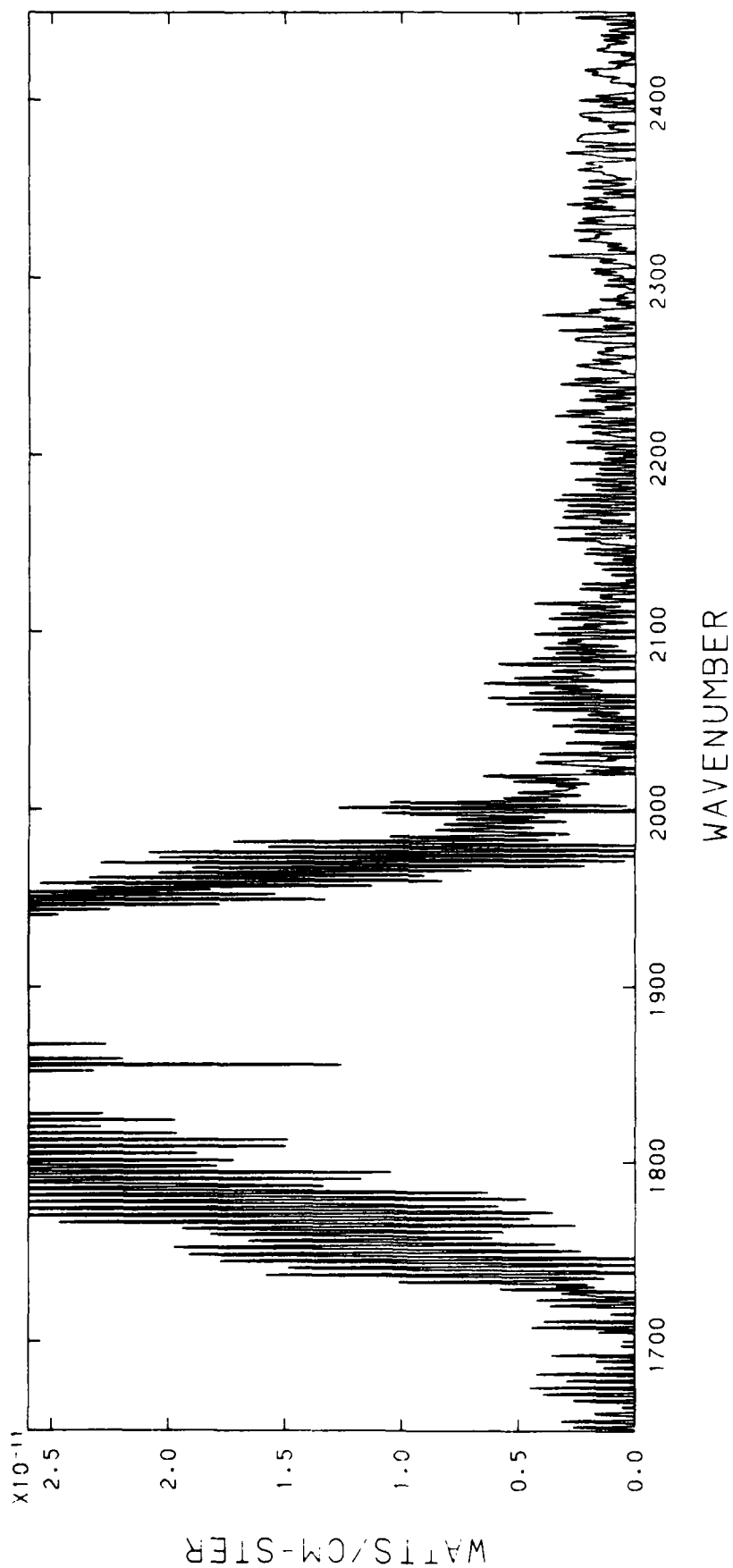


FILE 67, TIME 9: 9:30.852, ALT 139.3-139.3 KM

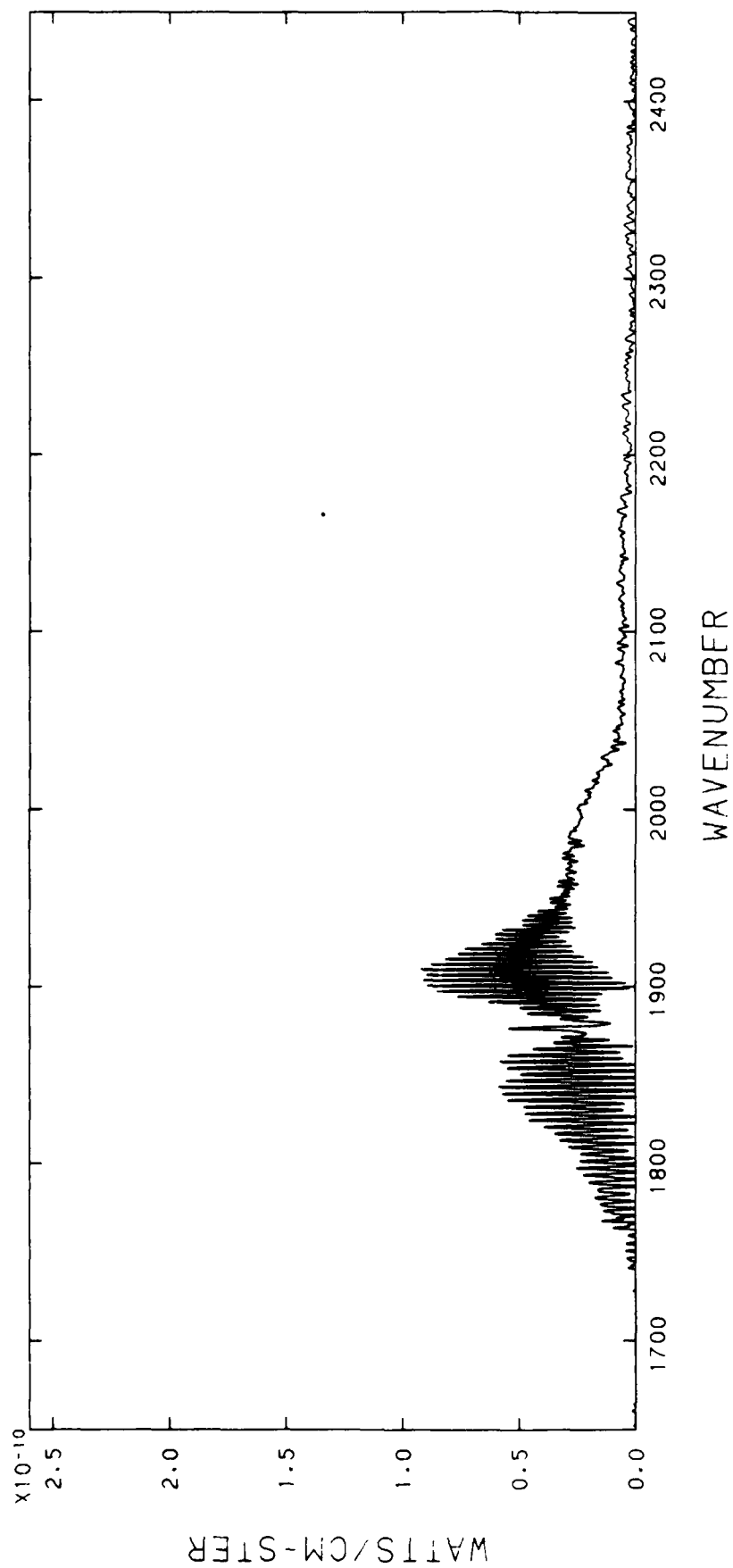


FILE 68, TIME 9: 9:32.486, ALT 139.3-139.2 KM

24 NOV 83 00:31



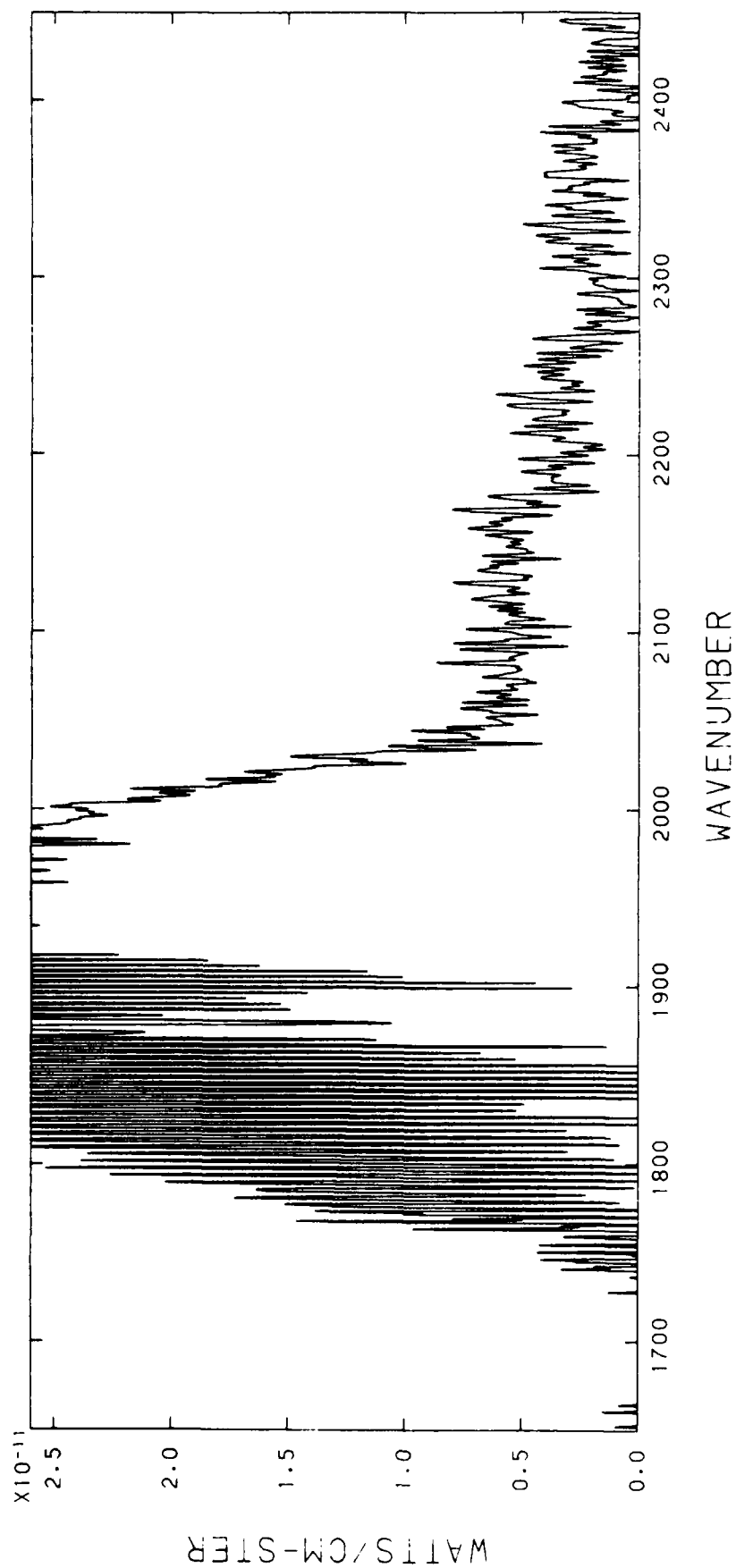
FILE 68, TIME 9: 9:32.486, ALT 139.3-139.2 KM



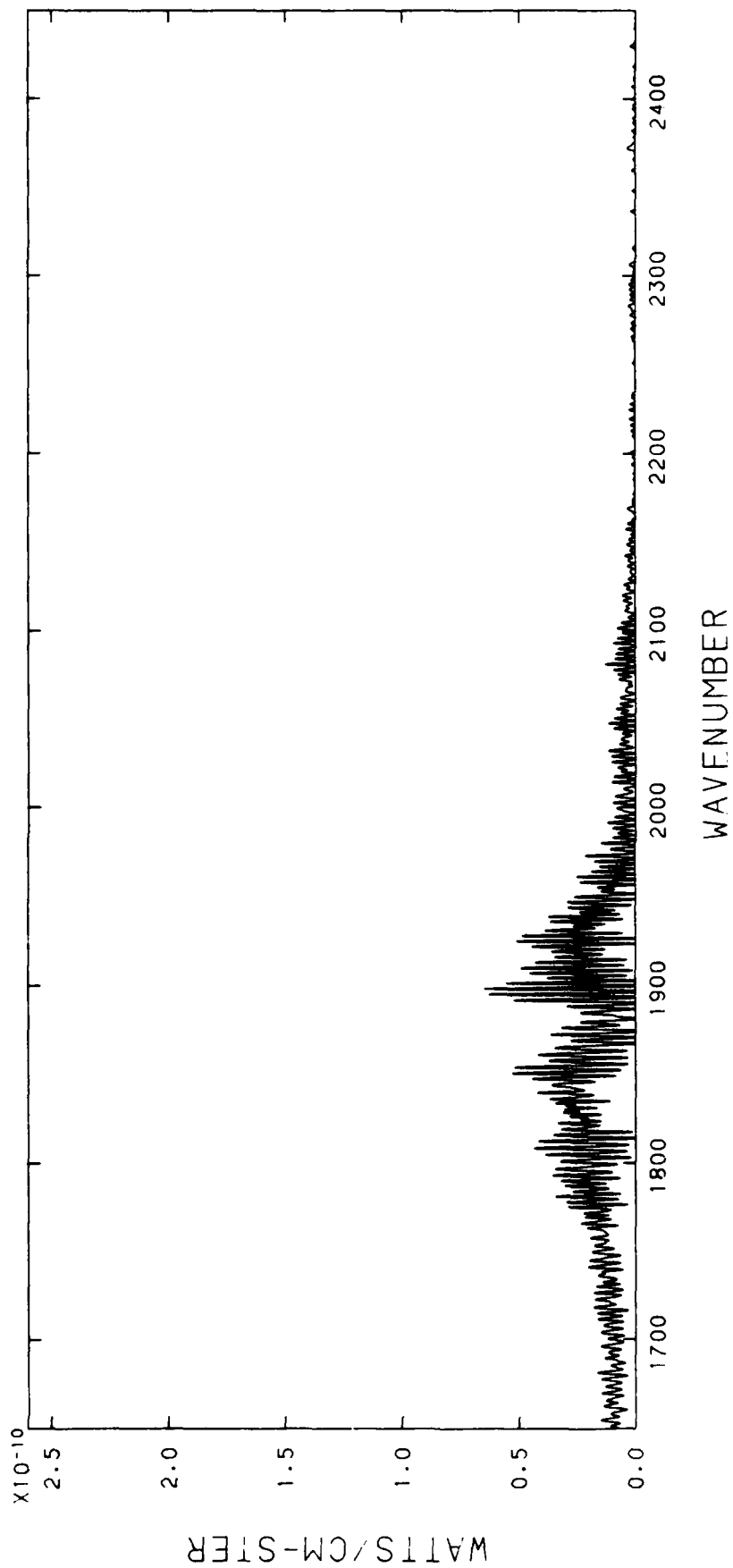
FILE 69, TIME 9: 9:34.134, ALT 139.2-139.1 KM

24-NOV-83 00:31



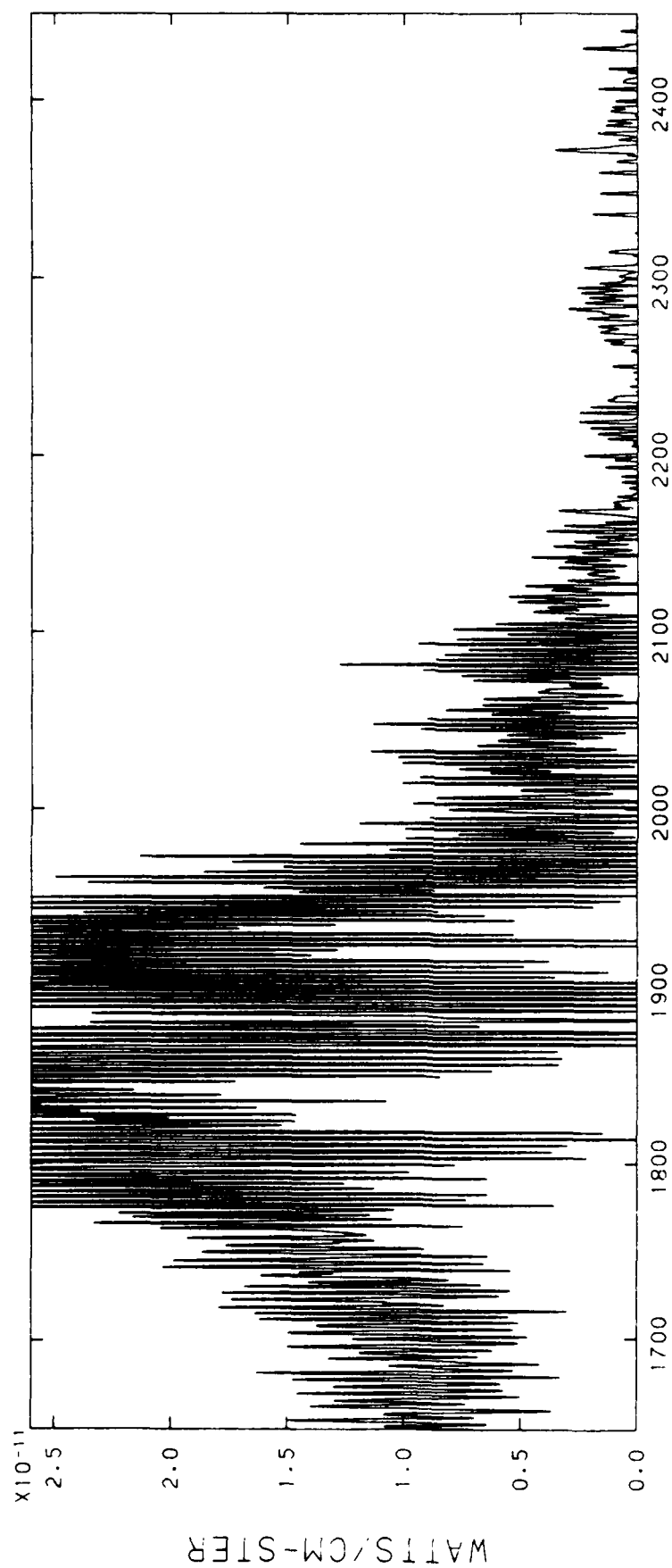


FILE 69, TIME 9: 9:34.134, ALT 139.2-139.1 KM



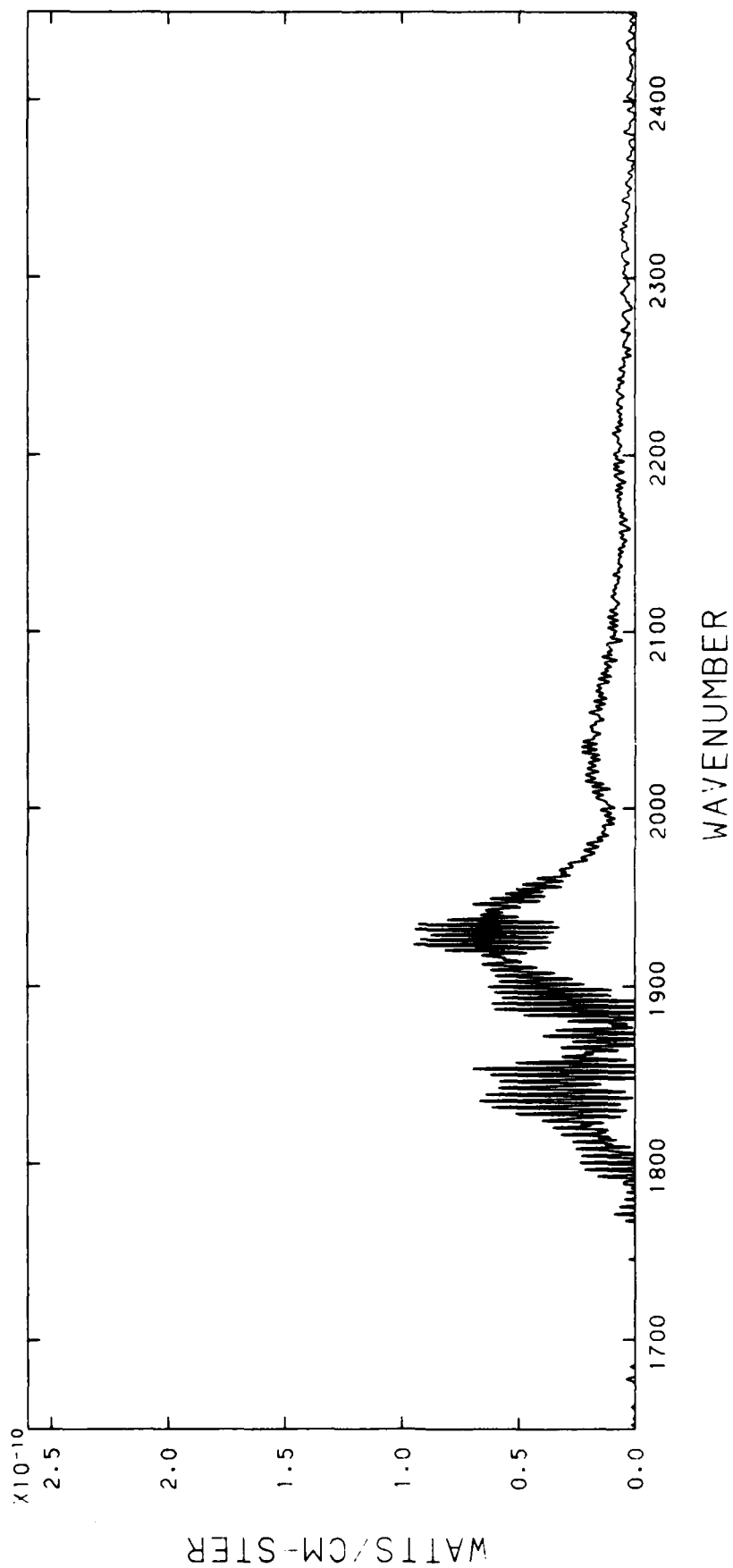
FILE 70, TIME 9: 9:35.782, ALT 139.1-139.0 KM

24 NOV 83 00:32



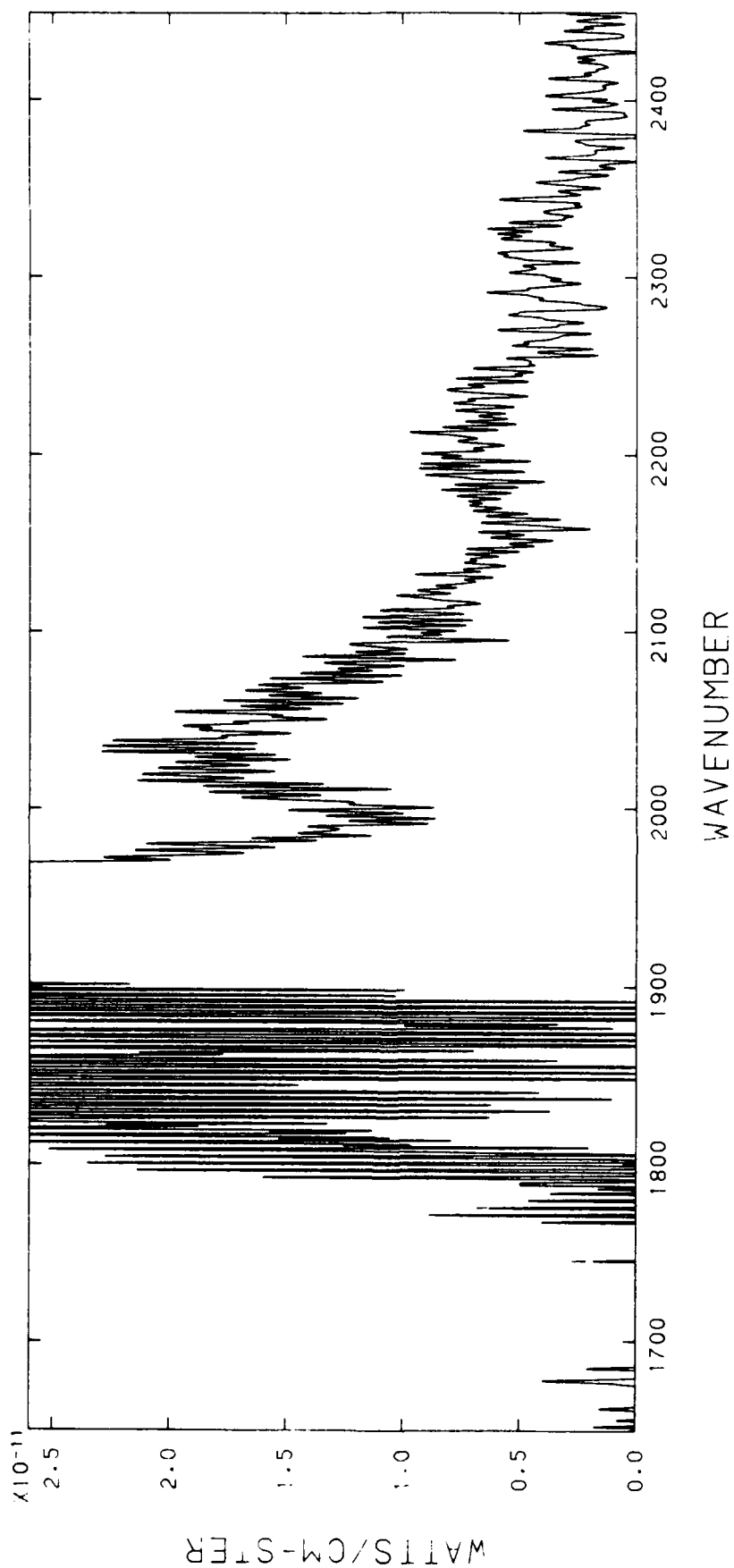
WAVENUMBER

FILE 70, TIME 9: 9:35.782, ALT 139.1-139.0 KM

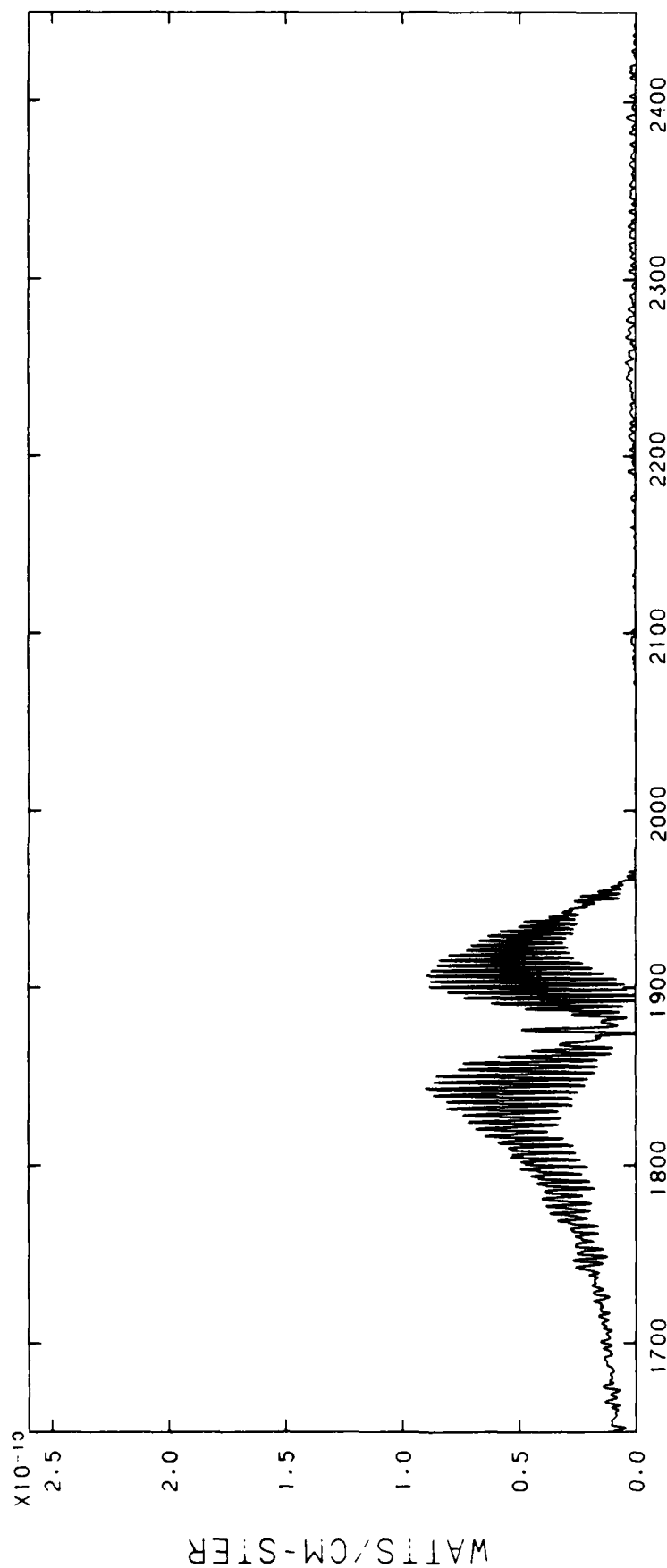


FILE 71, TIME 9: 9:37.426, ALT 139.0-138.9 KM

24-NOV-83 00:32

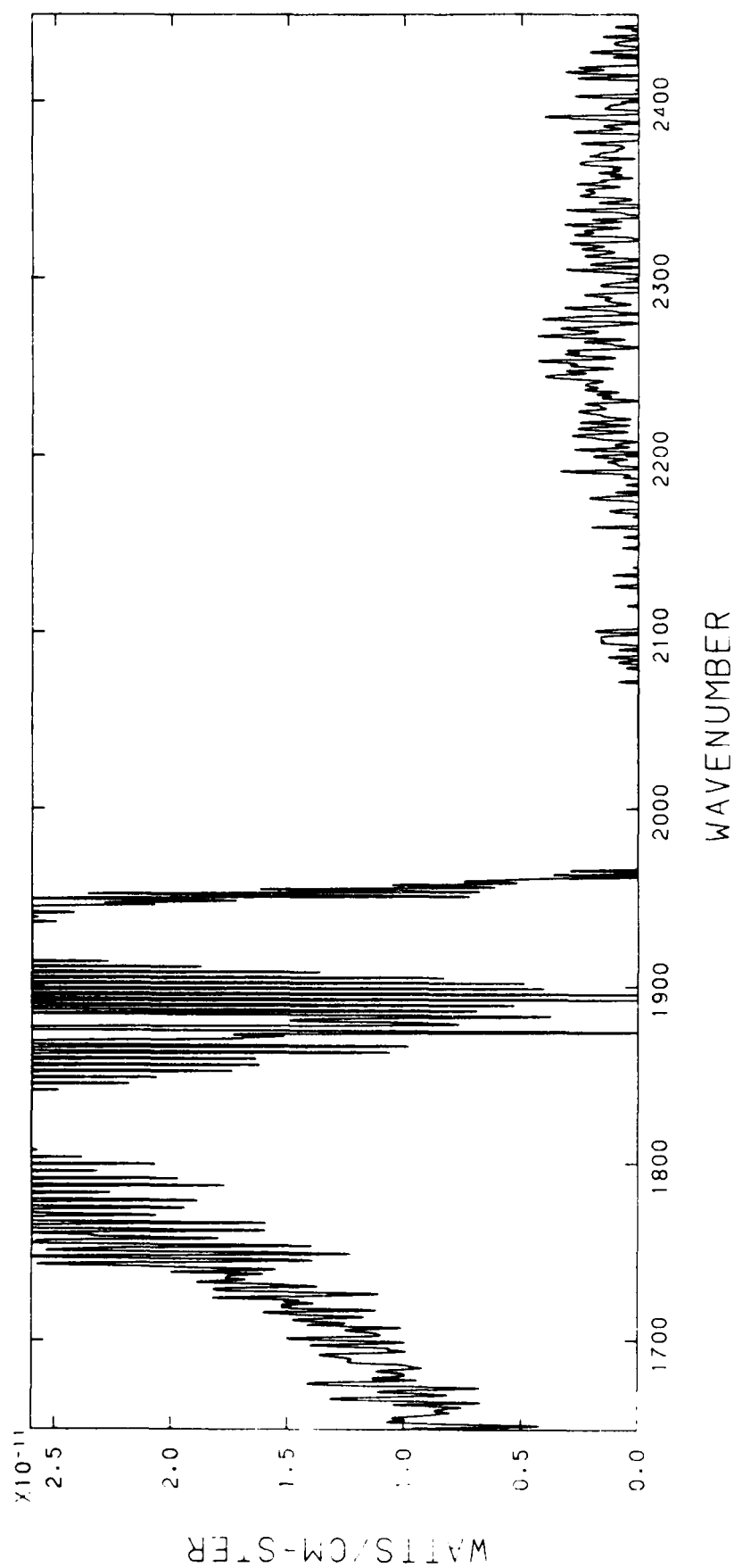


FILE 71, TIME 9: 9:37.426, ALT 139.0-138.9 KM



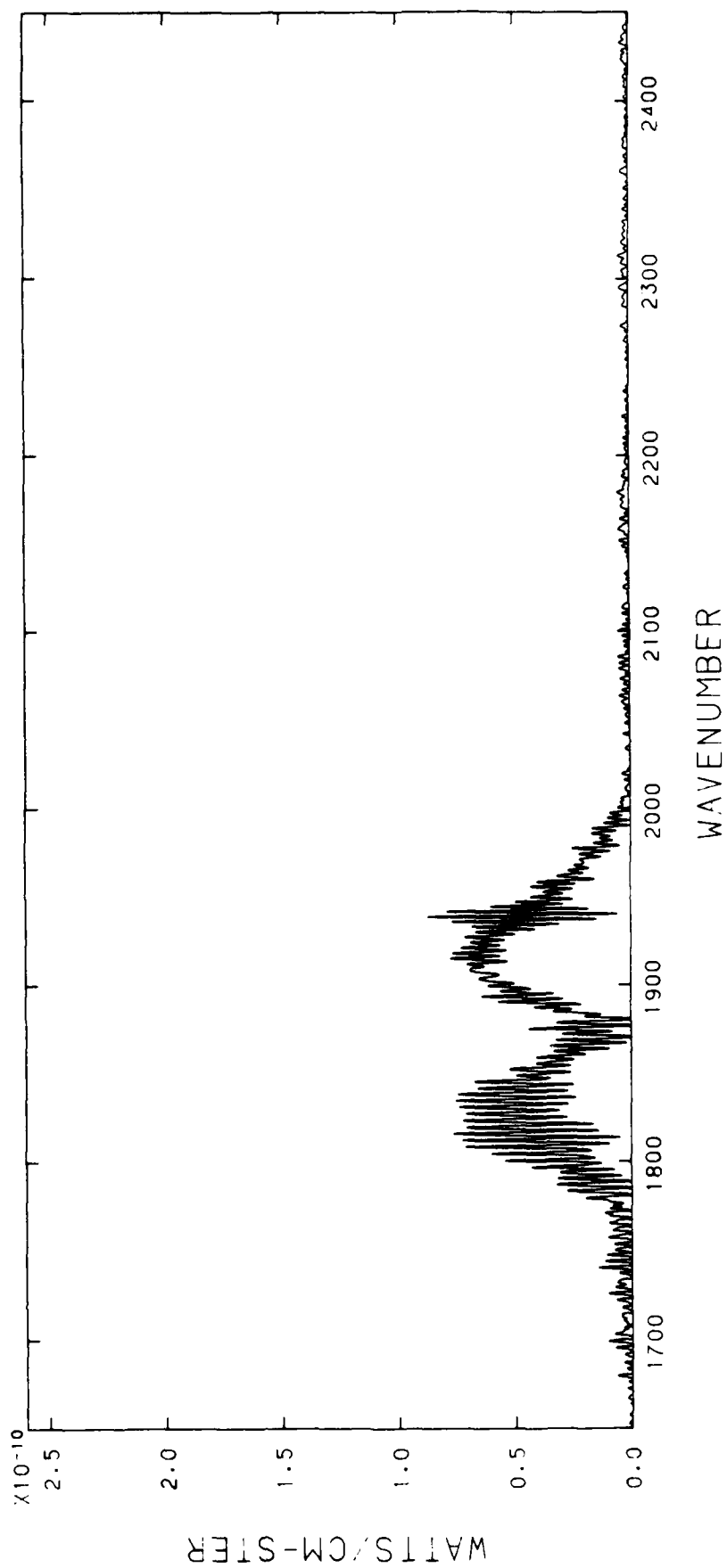
FILE 72, TIME 9: 9:39. 74, ALT 138.9-138.8 KM

24-NOV-83 00:52



FILE 72, TIME 9: 9:39. 74, ALT 138.9-138.8 KM

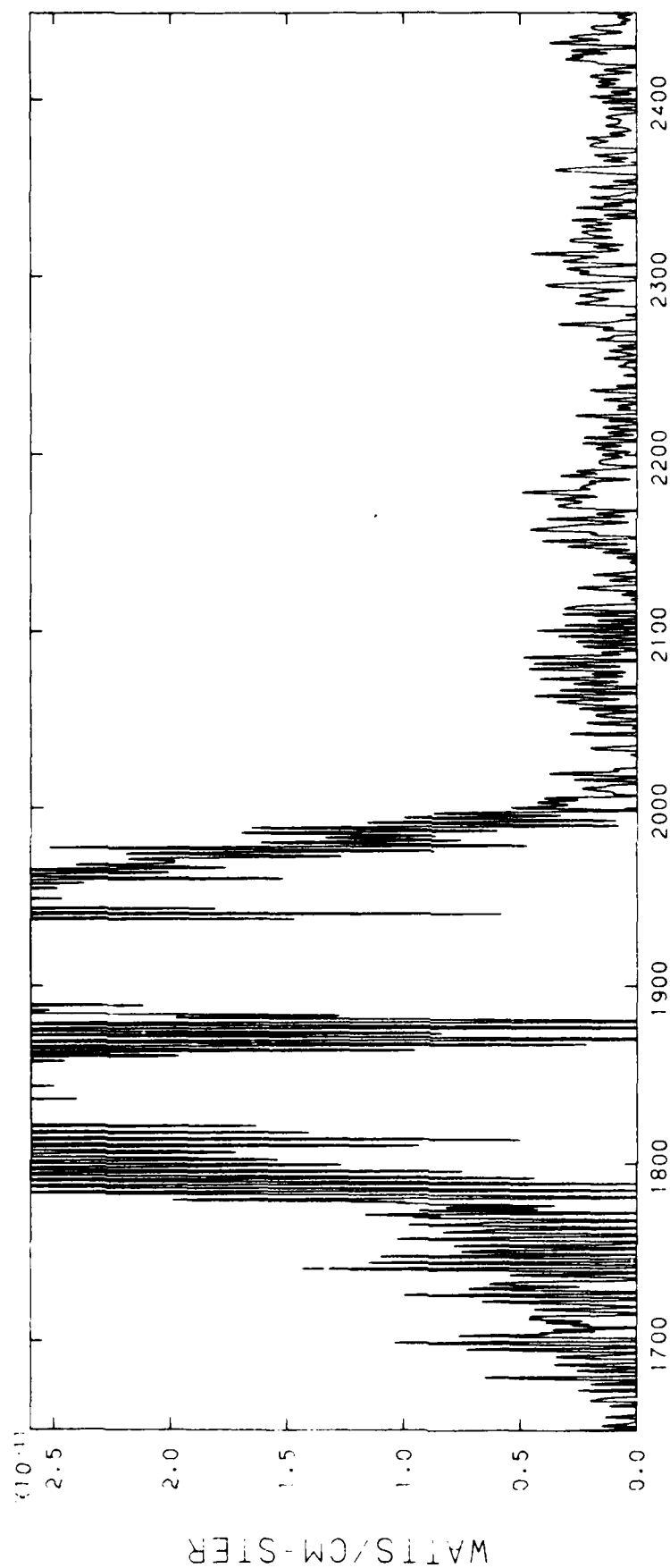
24-NOV-83 00:32



FILE 73, TIME 9: 9:40.702, ALT 138.8 138.6 KM

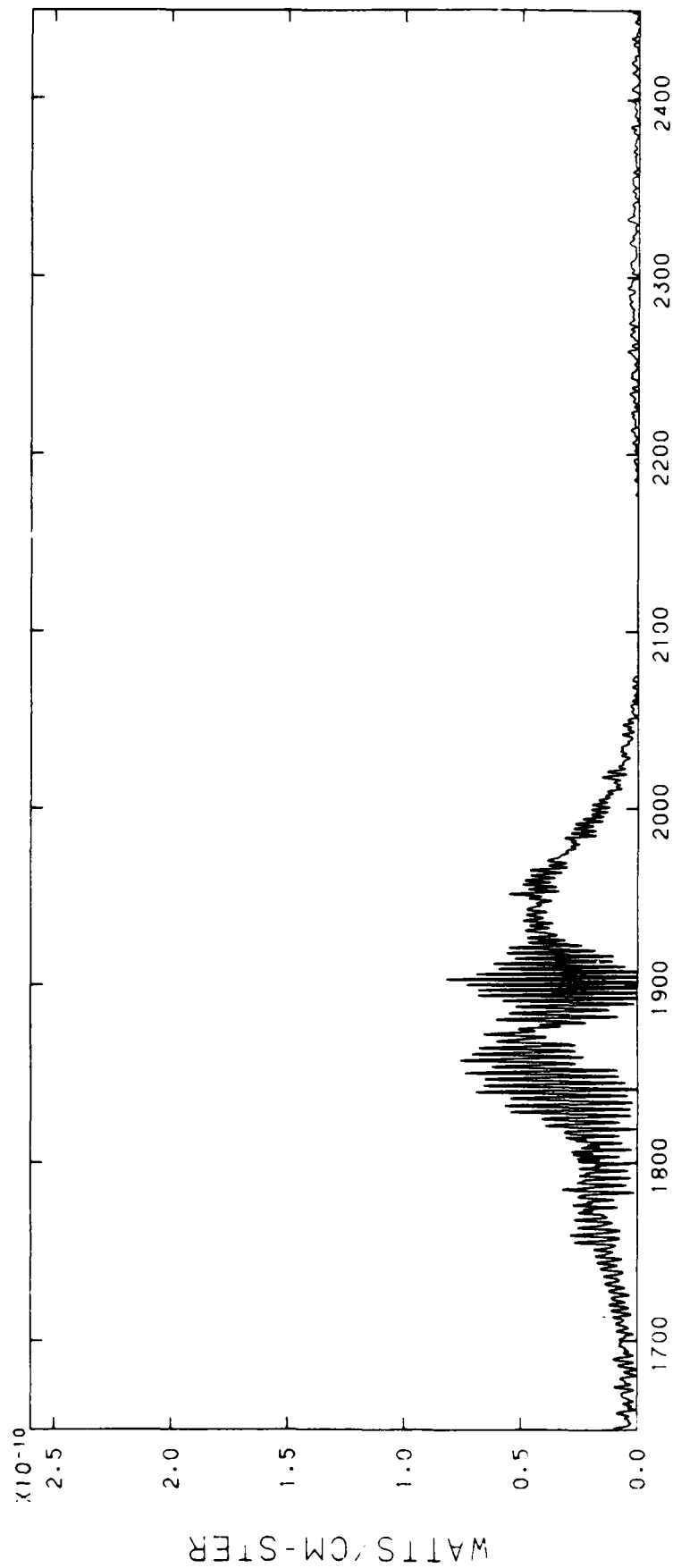
24 NOV 85 00:32





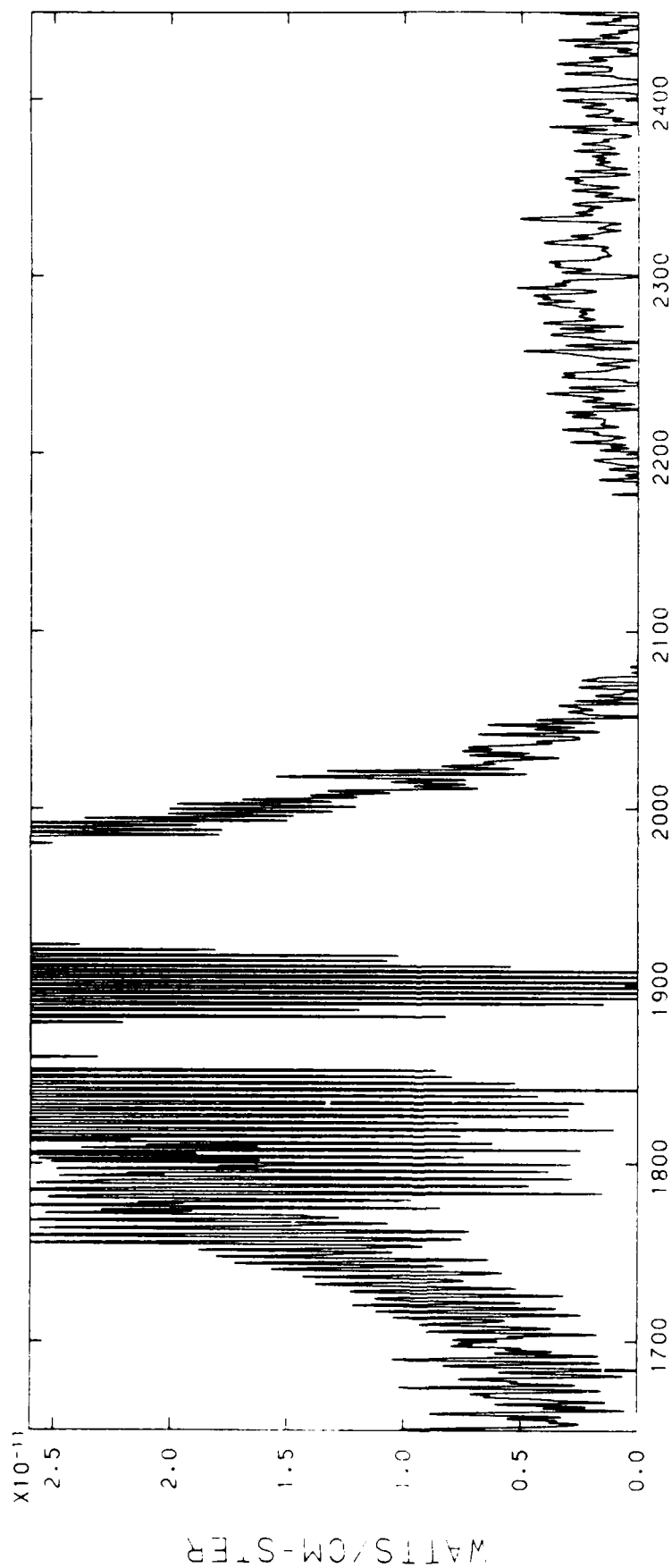
WAVENUMBER

FILE 73, TIME 9: 9:40.702, ALT 138.8-138.6 KM



FILE 74, TIME 9: 9:42.338, ALT 138.6--138.4 KM

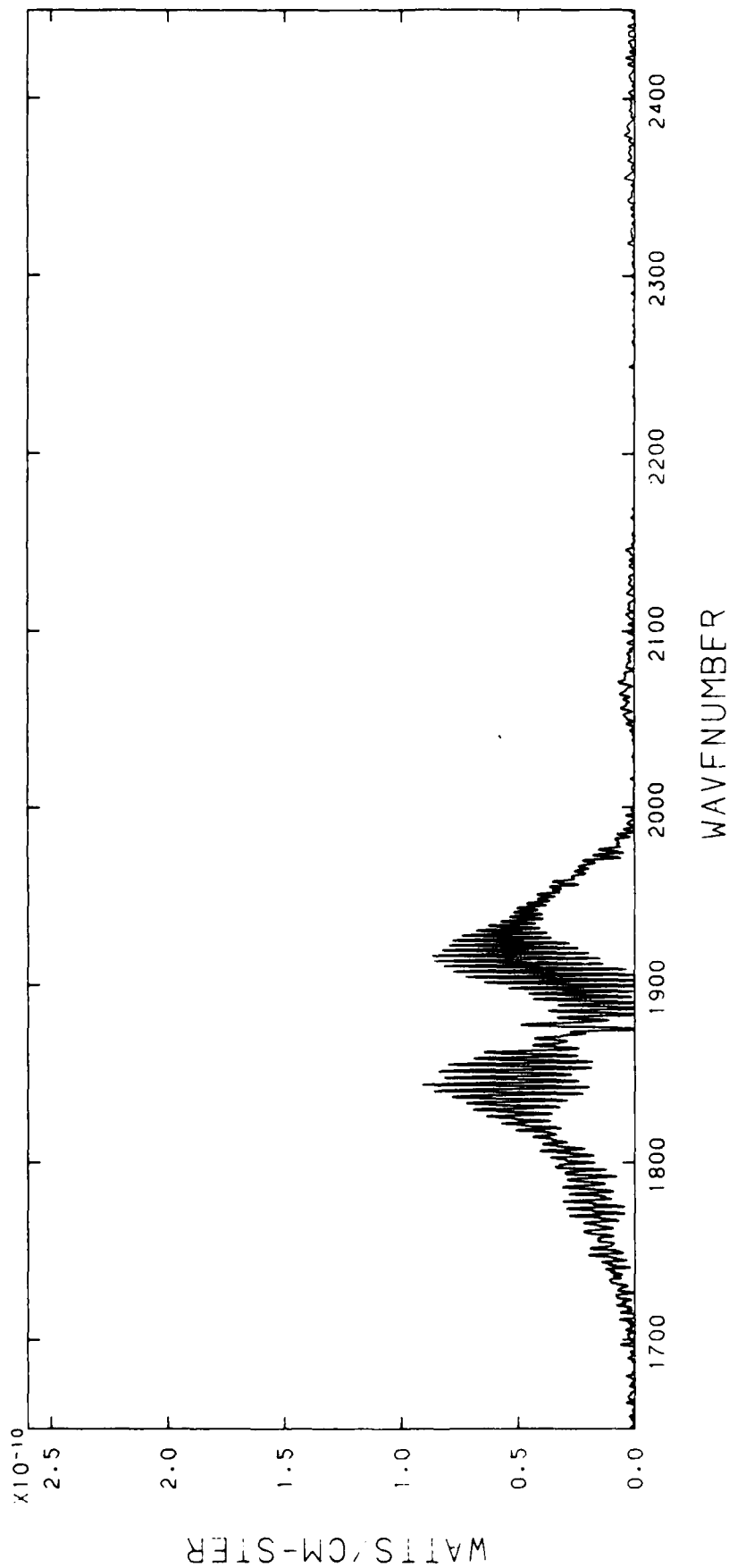
24-NOV 83 00:52



WAVENUMBER

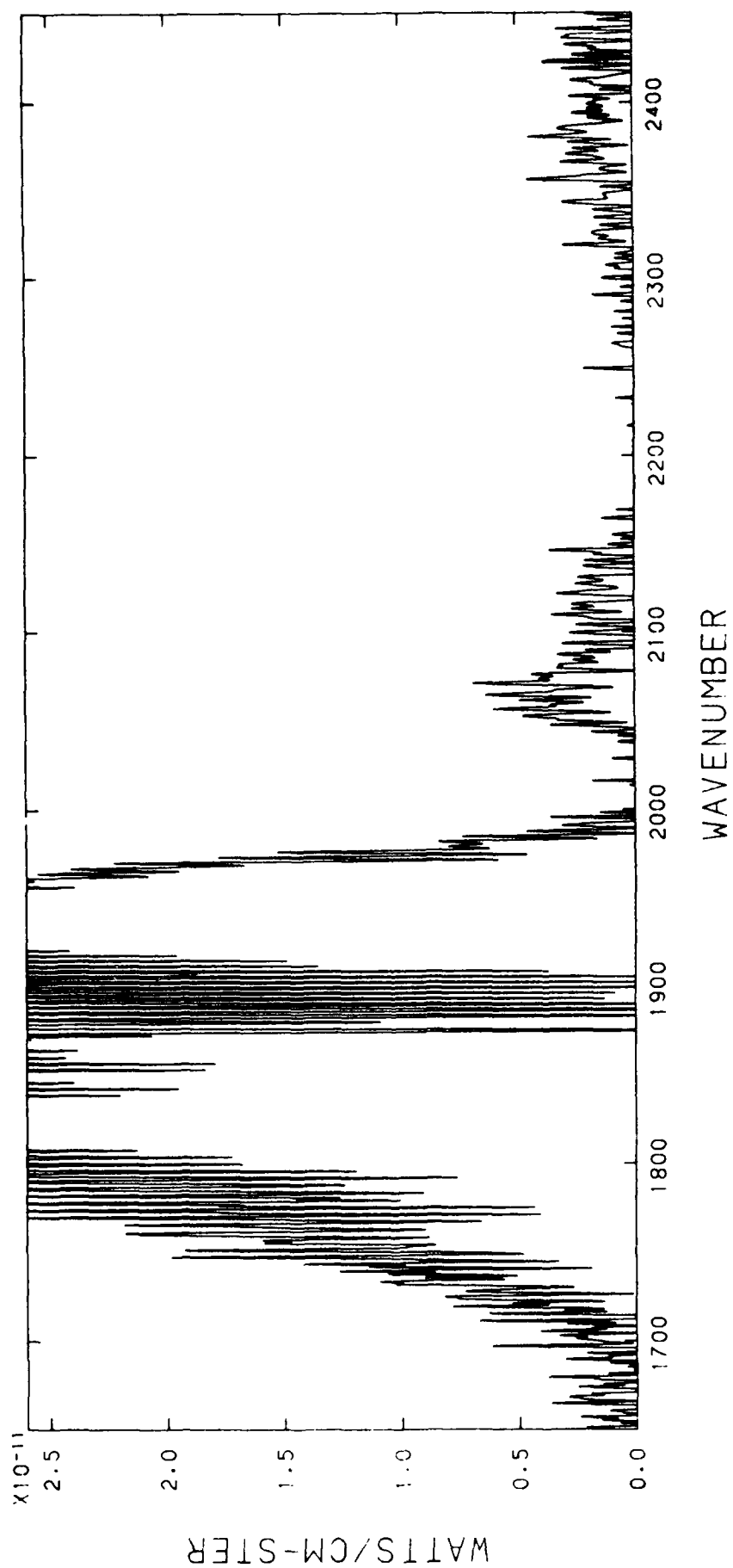
FILE 74, TIME 9: 9:42.338, ALT 138.6--138.4 KM

24-V07-8J 00132

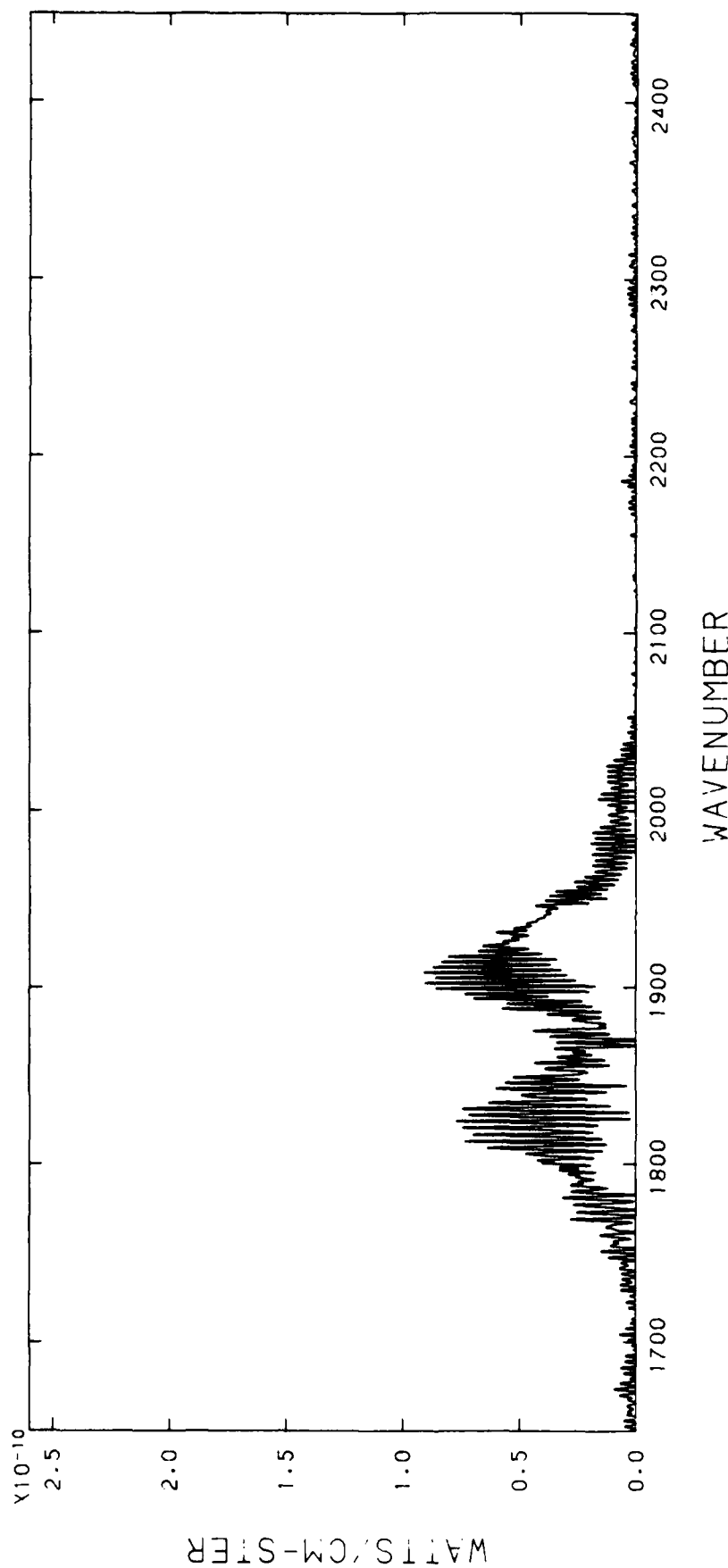


FILF 75, TIME 9: 9:43.980, ALT 138.4 138.2 KM

24 007-83 00:33

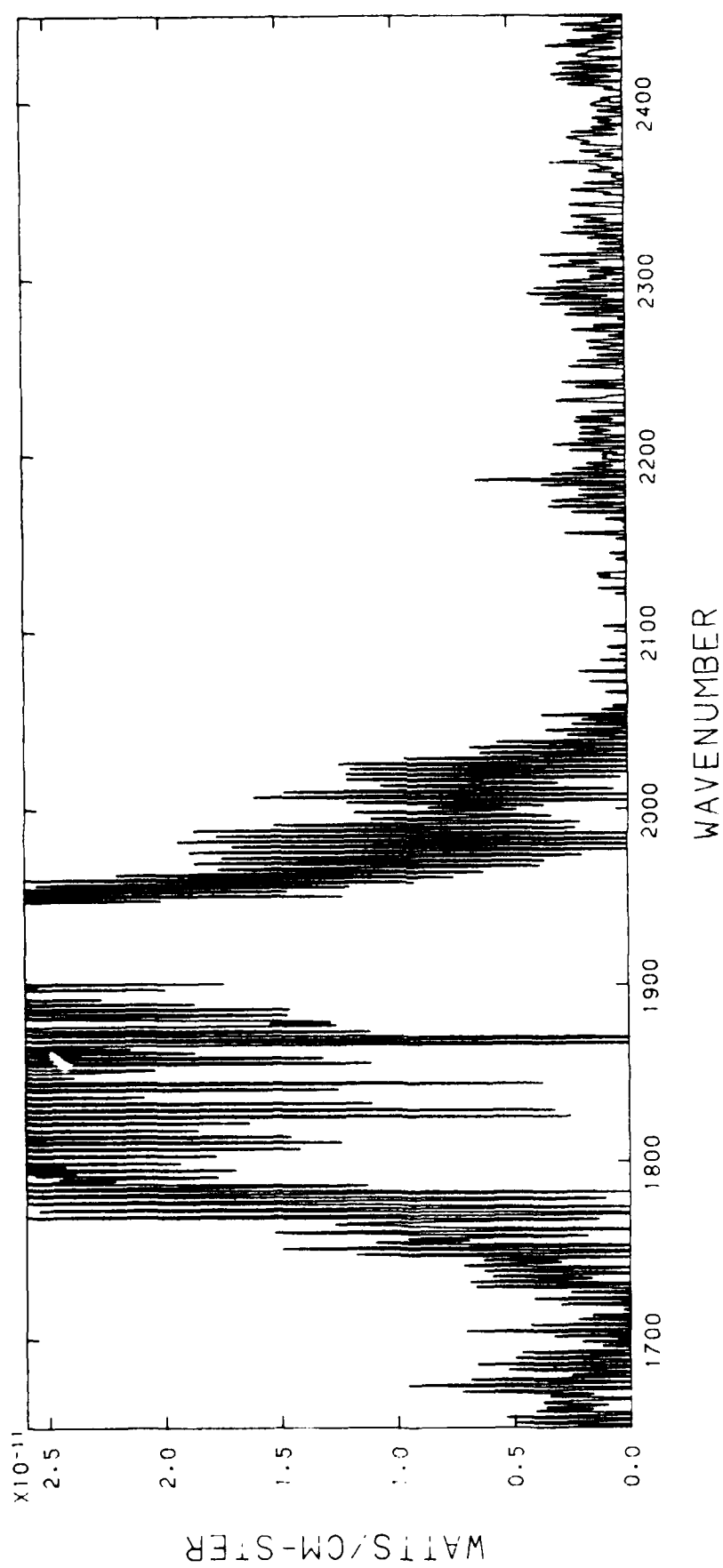


FILE 75, TIME 9: 9:43.980, ALT 138.4-138.2 KM



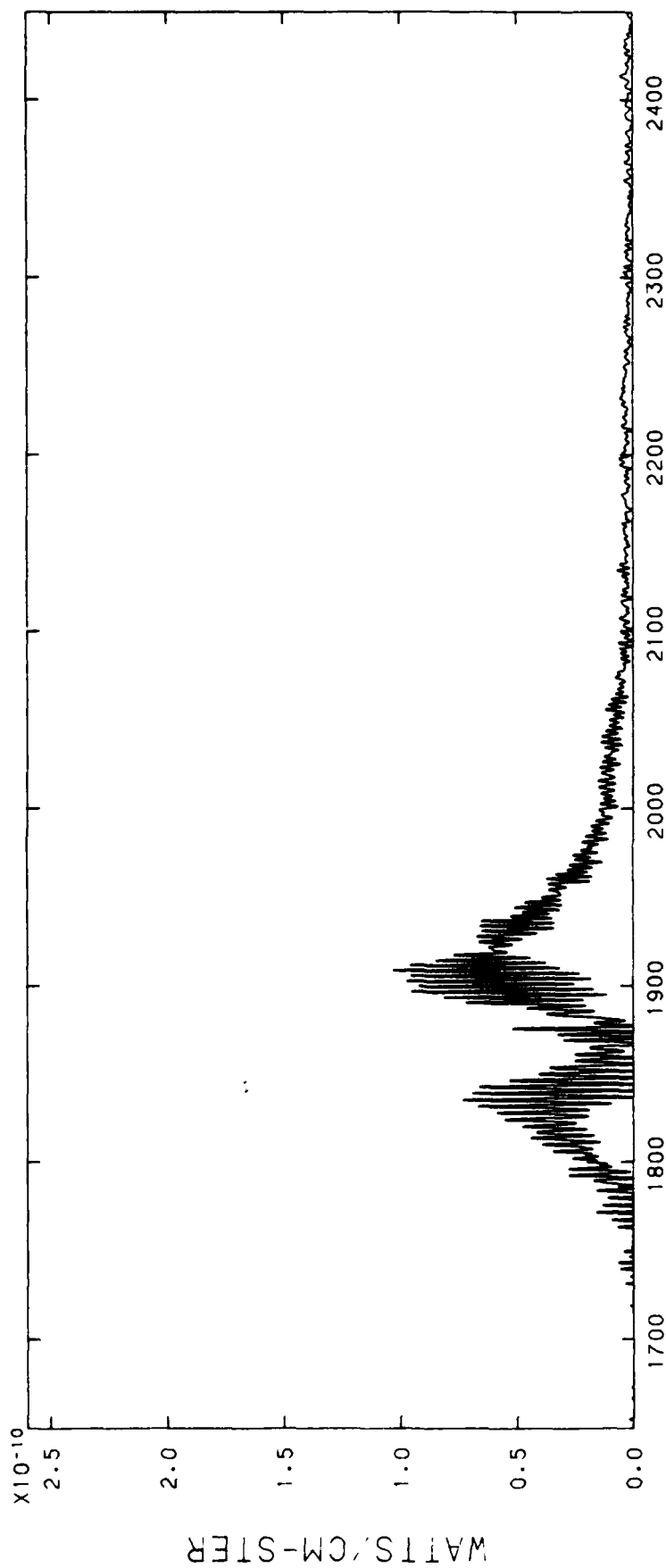
FILE 76, TIME 9: 9:45.618, ALT 138.2-137.9 KM

24 NOV-83 00:53



FILE 76, TIME 9: 9:45.618, ALT 138.2-137.9 KM

24-NOV-83 00:33

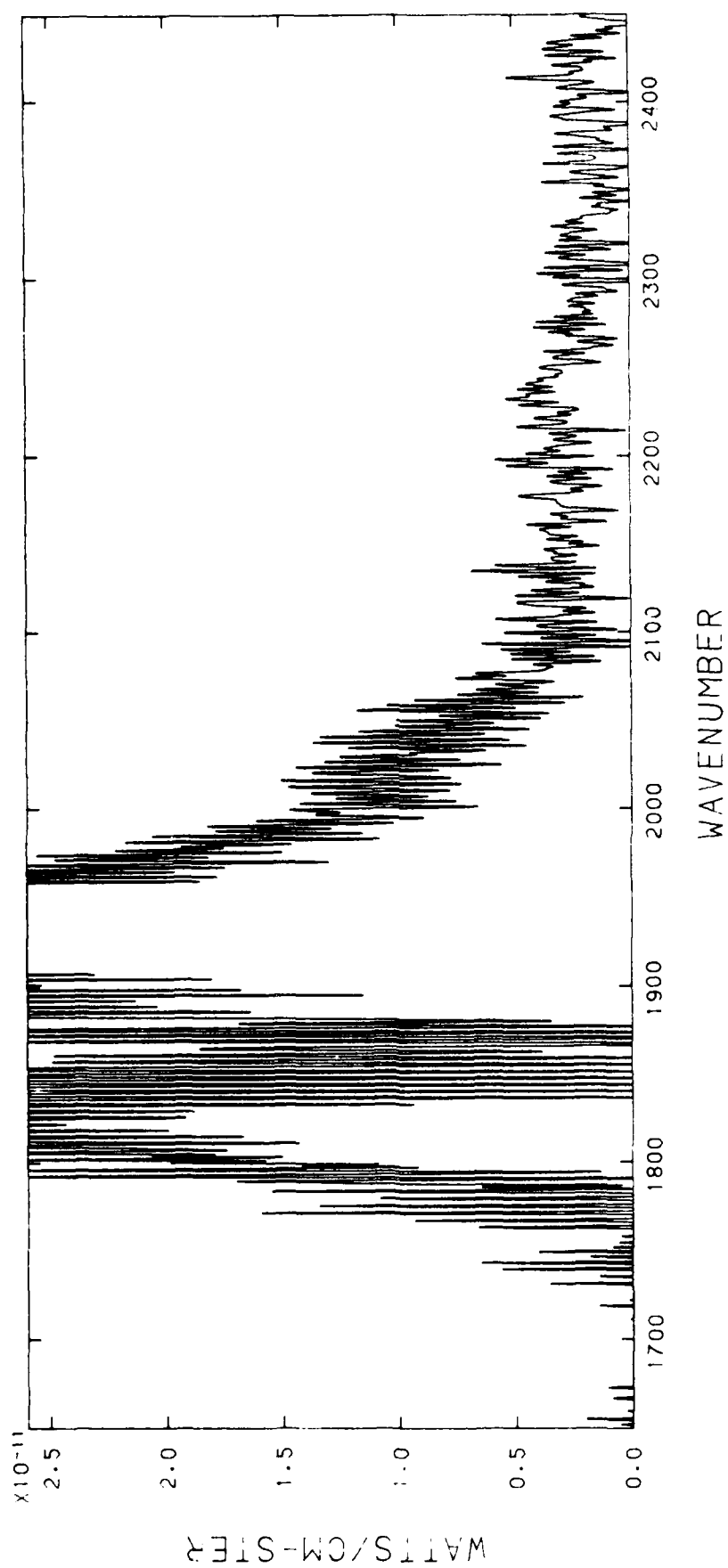


WAVENUMBER

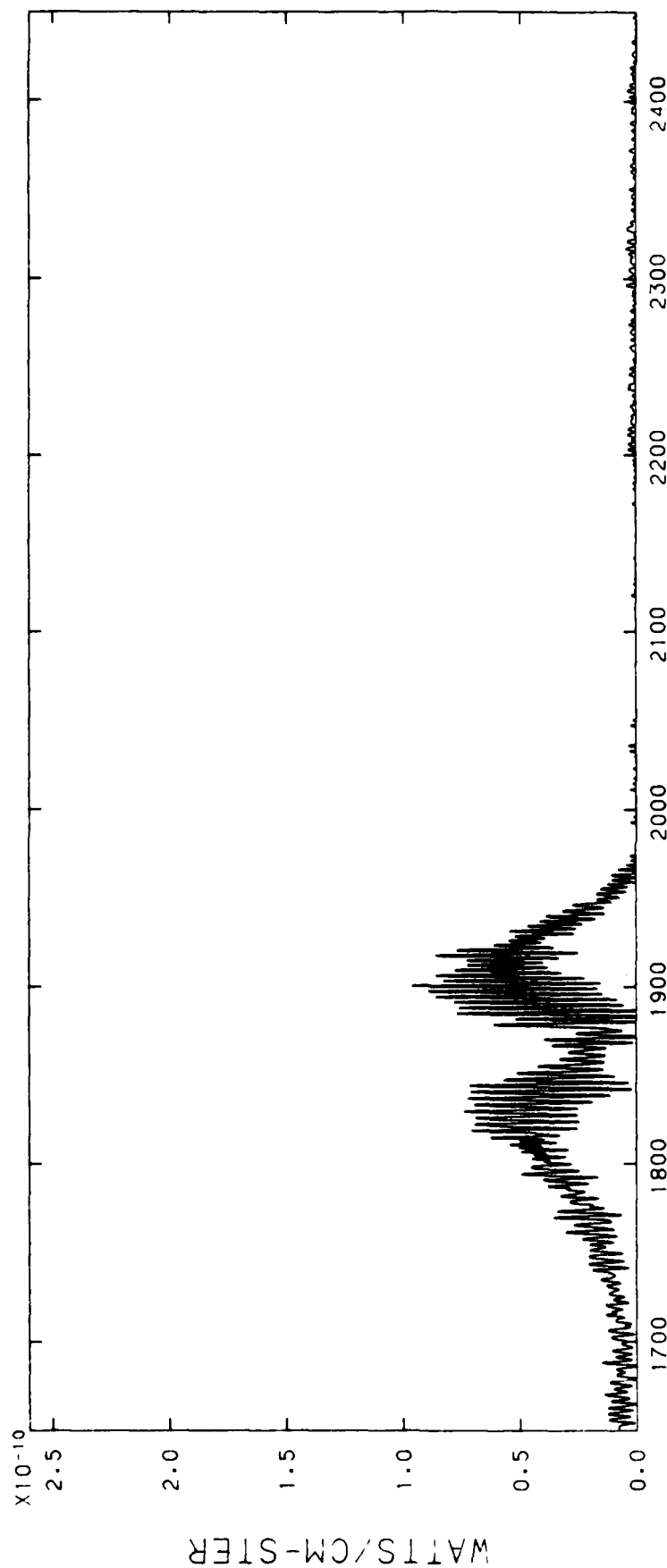
FILE 77, TIME 9: 9:47.246, ALT 137.9-137.7 KM

24-NOV-83 00:33





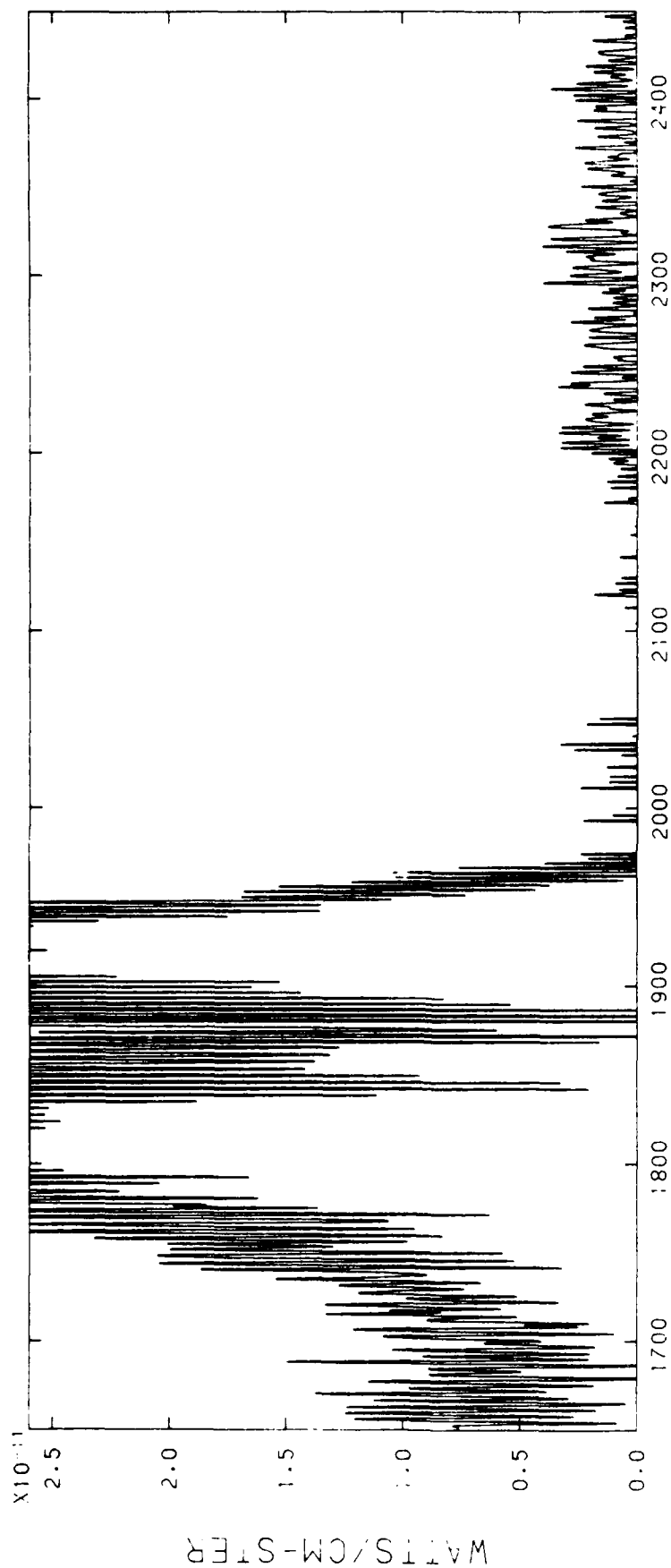
FILE 77, TIME 9: 9:47.246, ALT 137.9-137.7 KM



WAVENUMBER

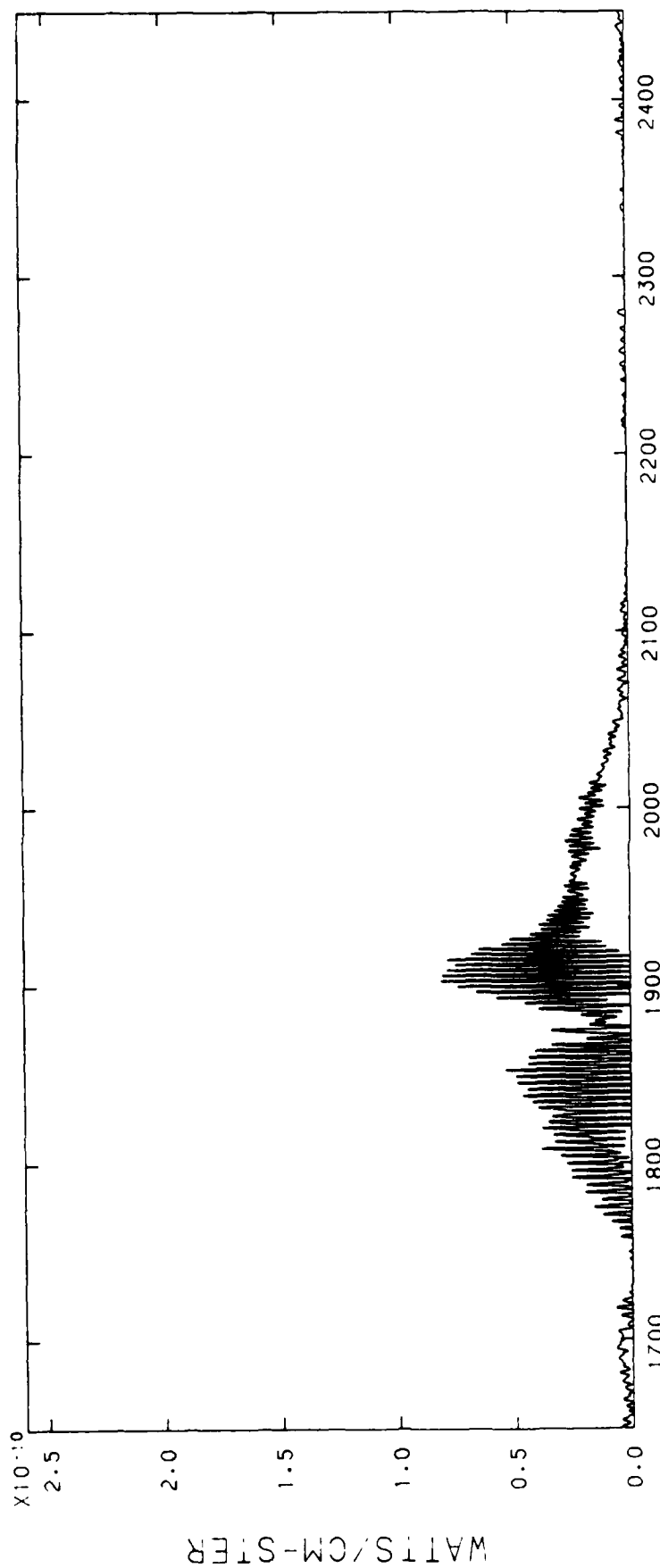
FILE 78, TIME 9: 9:48.880, ALT 137.7-137.3 KM

24-NOV-83 00:33



WAVENUMBER

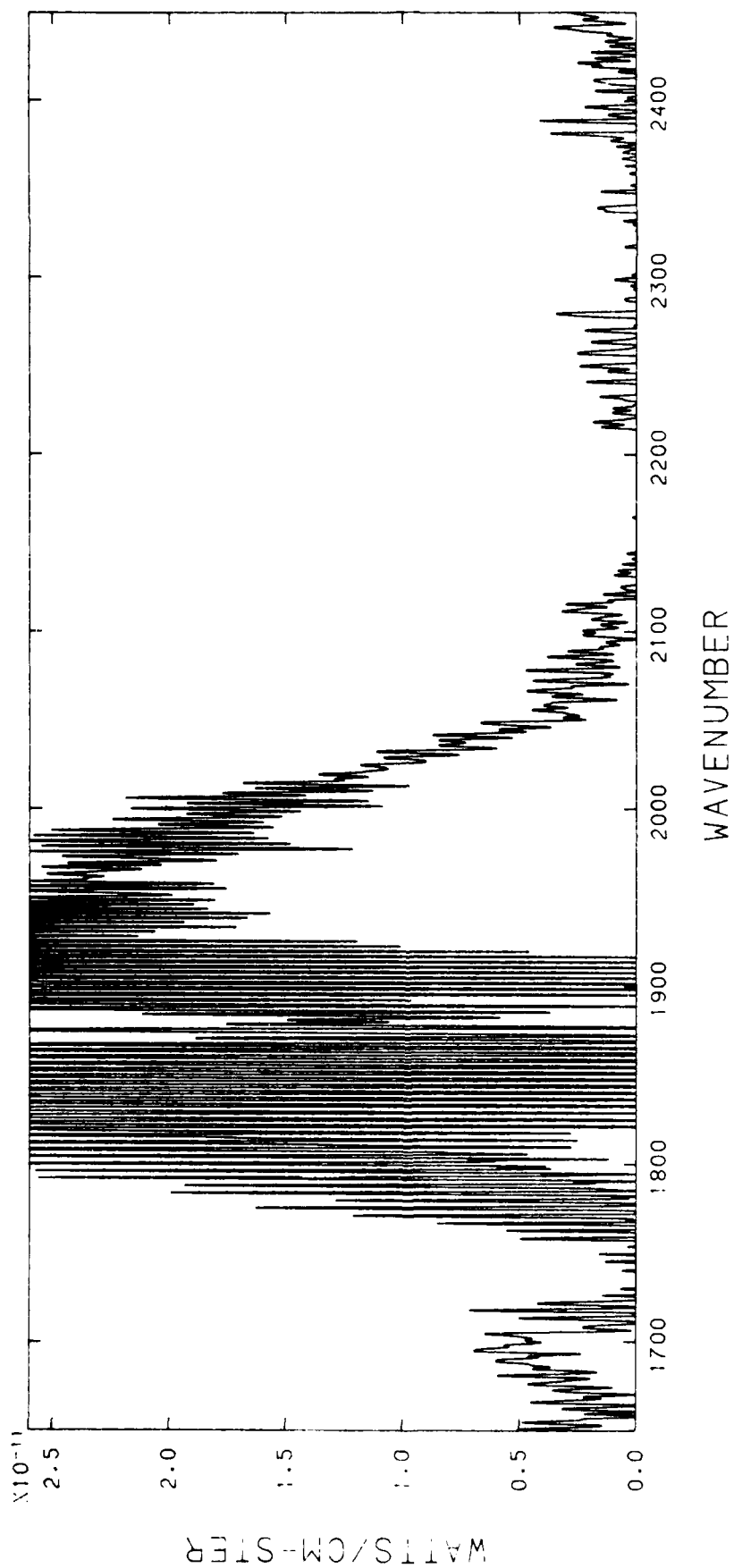
FILE 78, TIME 9: 9:48.880, ALT 137.7-137.3 KM



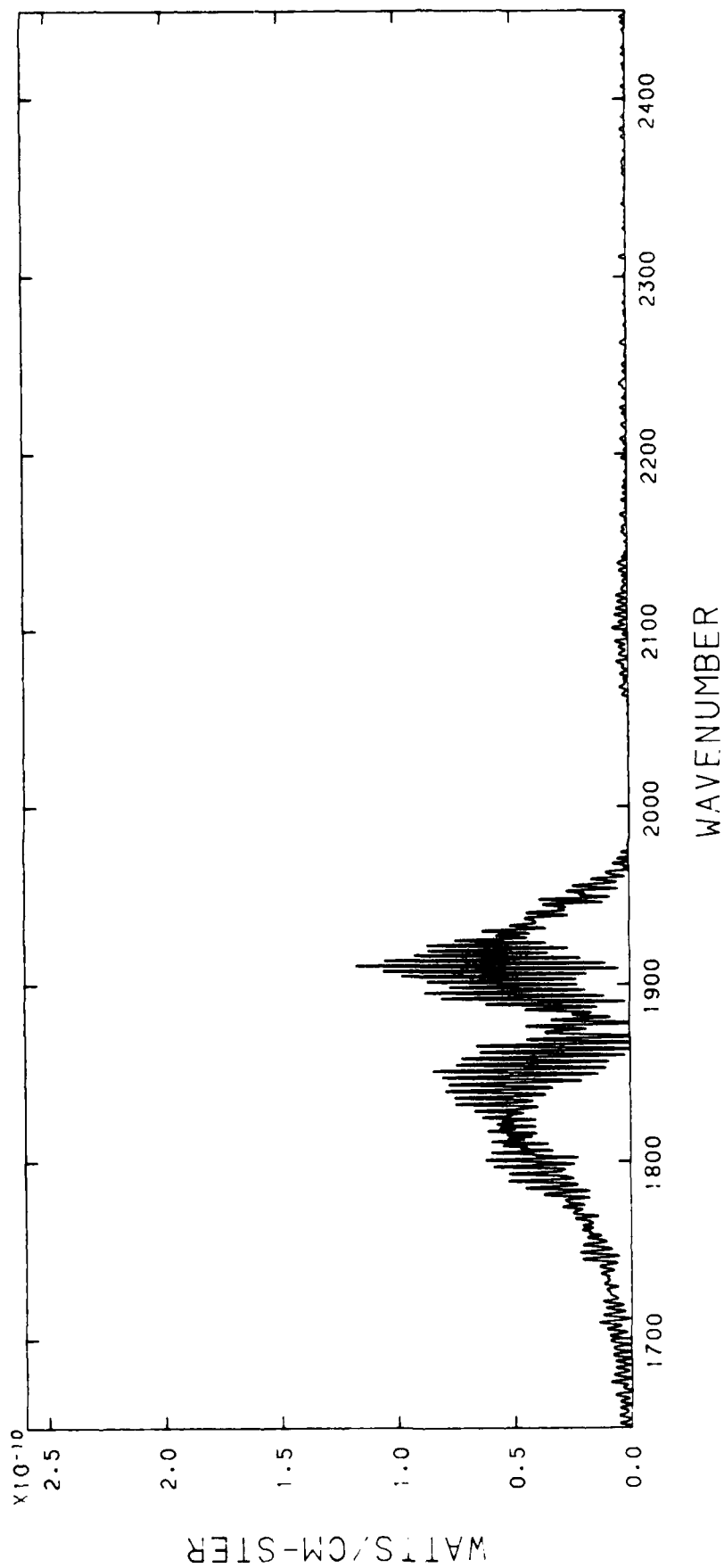
WAVENUMBER

FILE 79, TIME 9: 9:50.520, ALT 137.3-137.0 KM

24-NOV-83 00:33

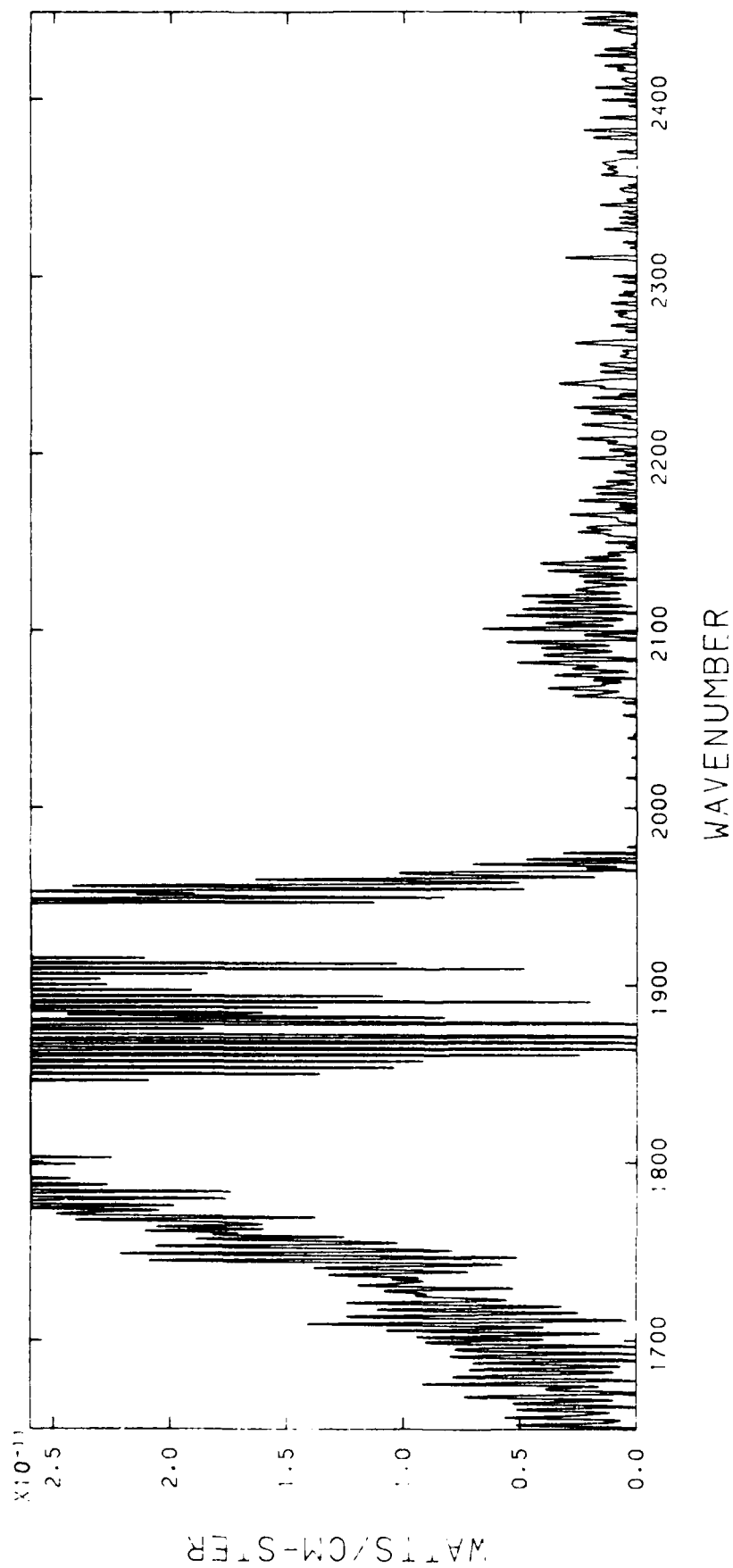


FILE 79, TIME 9: 9:50.520, ALT 137.3-137.0 KM



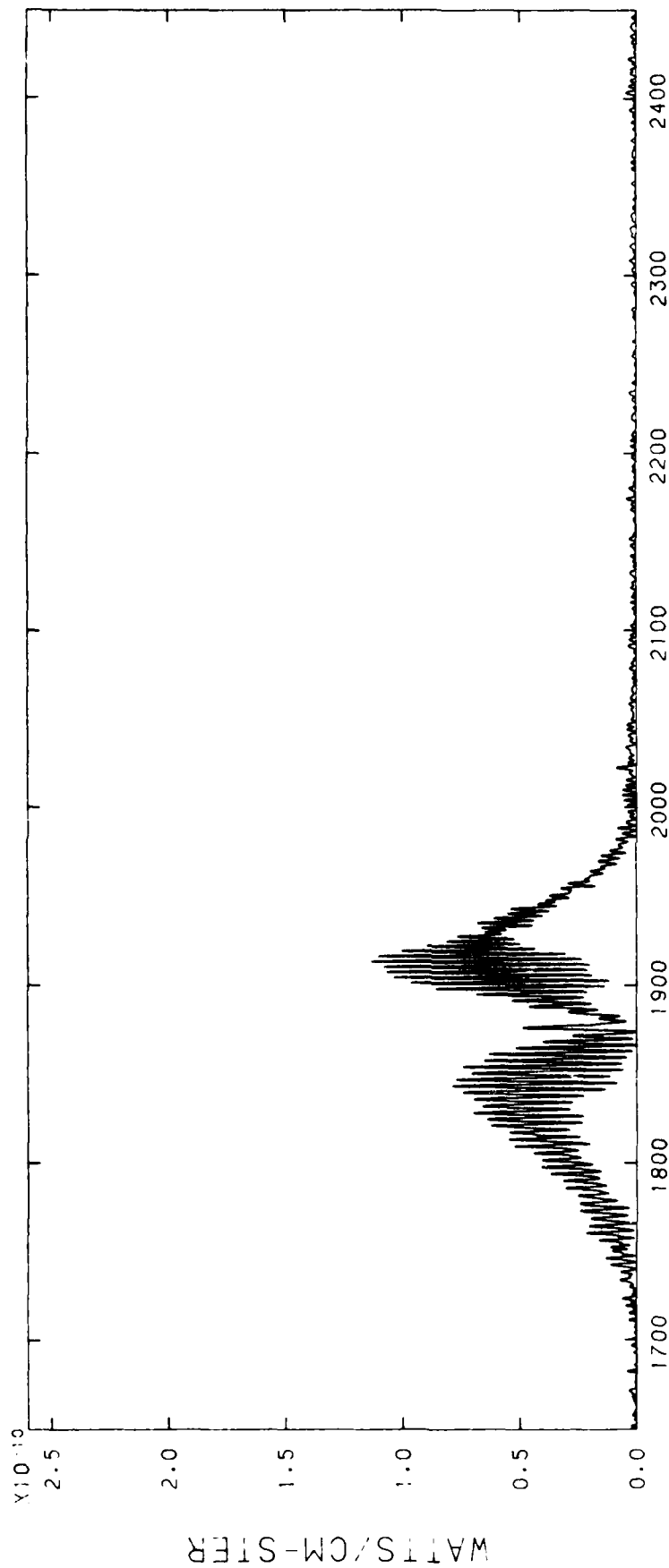
FILE 80, TIME 9: 9:52.166, ALT 137.0-136.7 KM

24-NOV-83 00:33



FILE 80, TIME 9: 9:52.166, ALT 137.0-136.7 KM

24-NOV-83 00:33

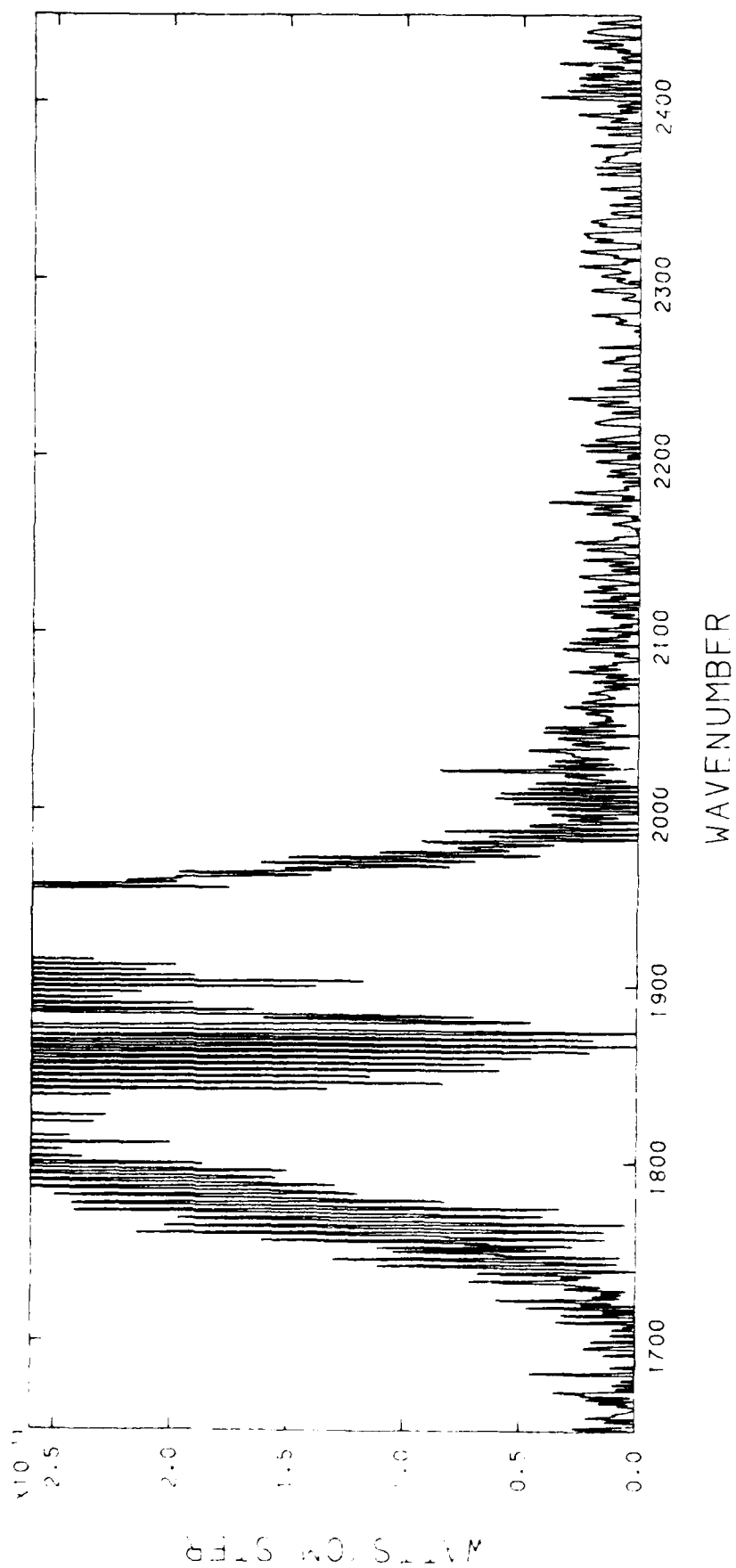


WAVENUMBER

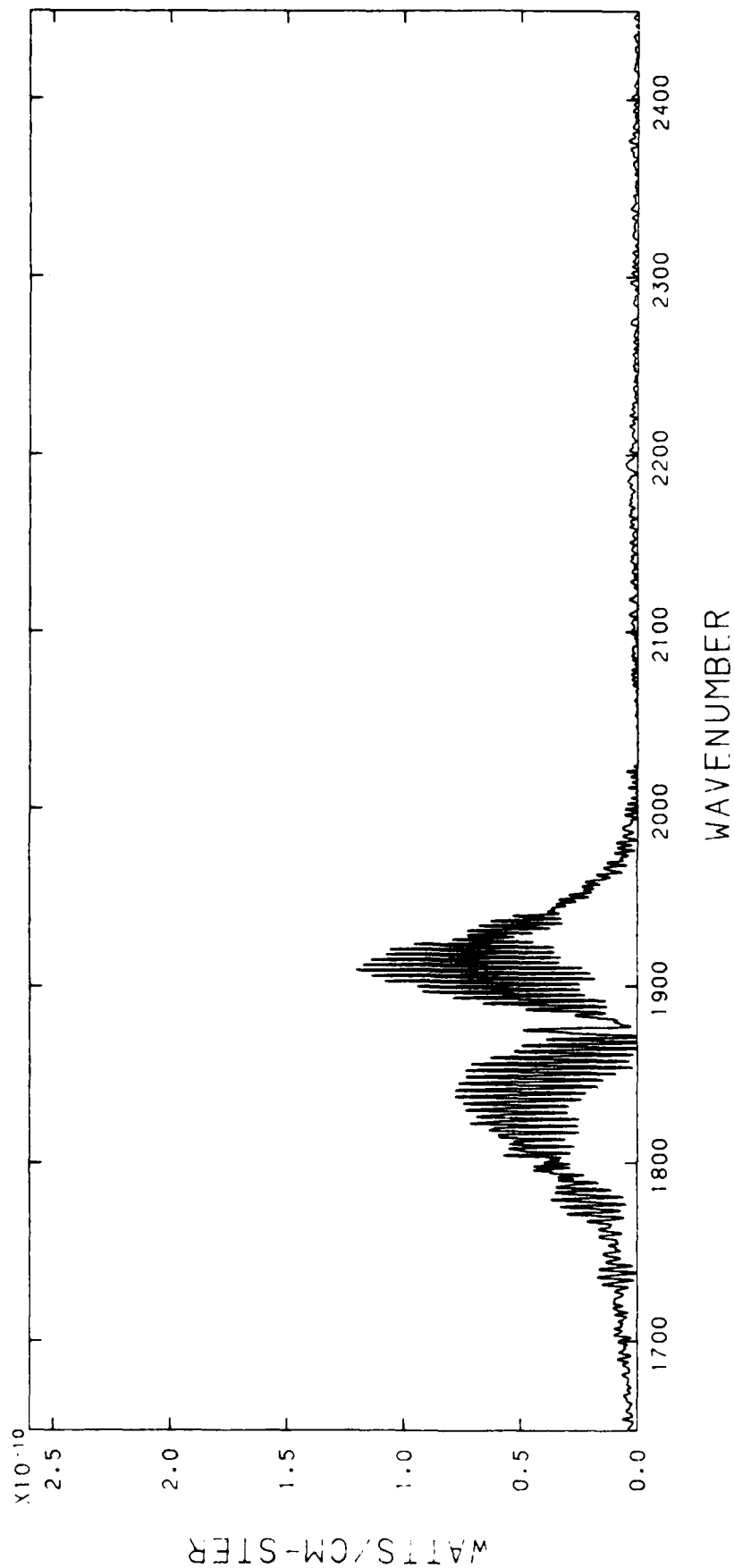
FILE 81, TIME 9: 9:53.798, ALT 136.7-136.3 KM

24-NOV-83 00:34



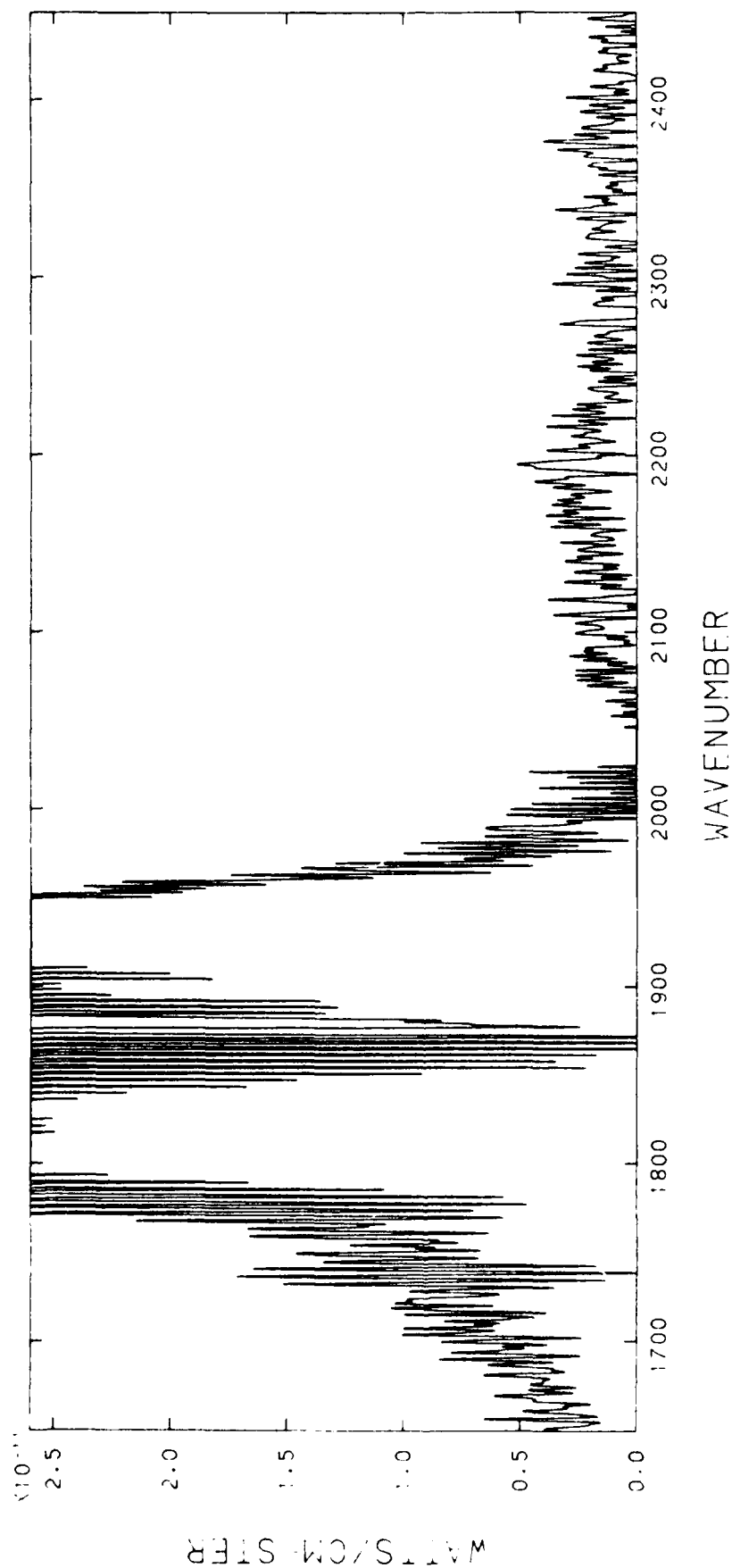


FILE 81, TIME 9: 9: 53.798, ALT 136.7-136.3 KM

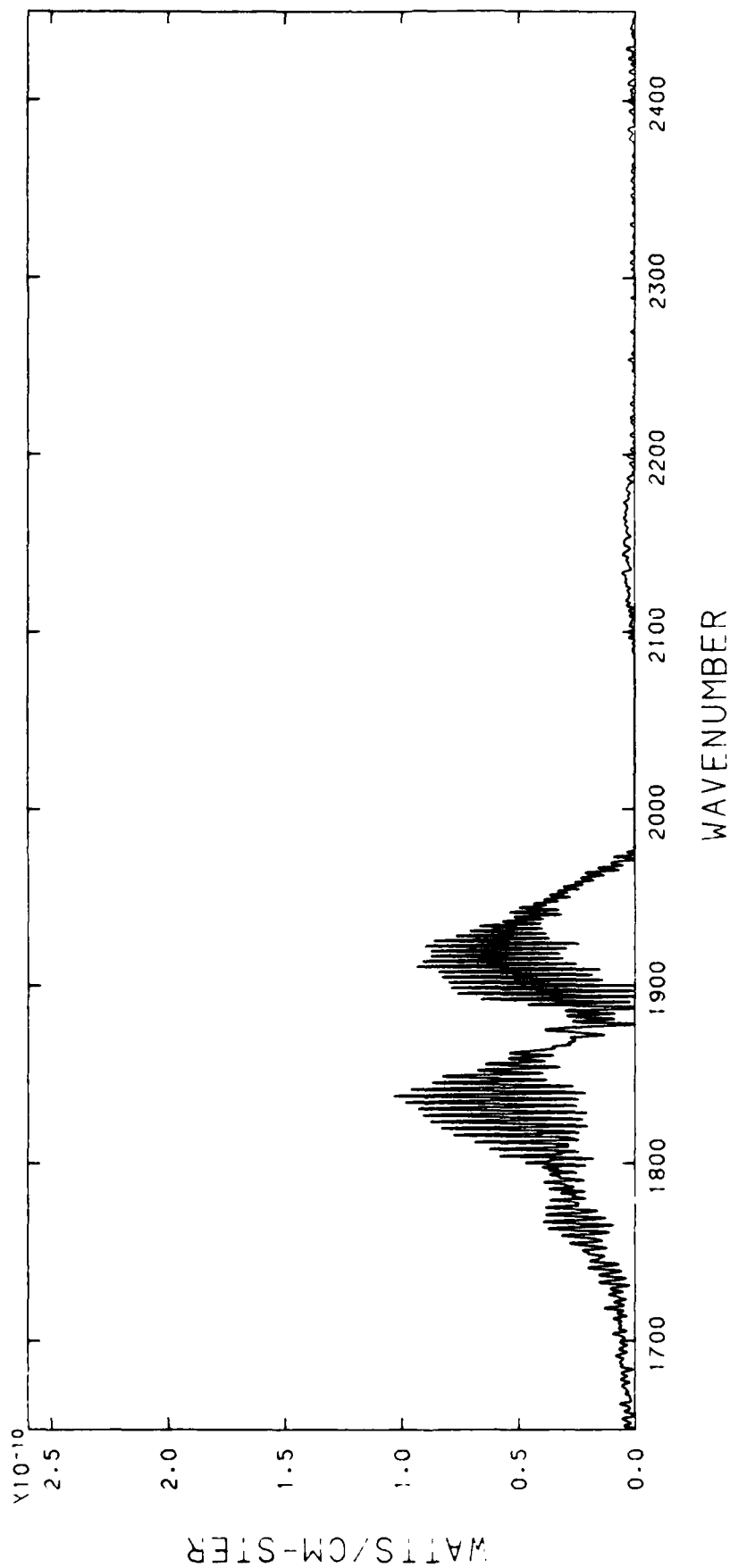


FILE 82, TIME 9: 9:55.428, ALT 136.3-135.9 KM

24-NOV-83 00:34

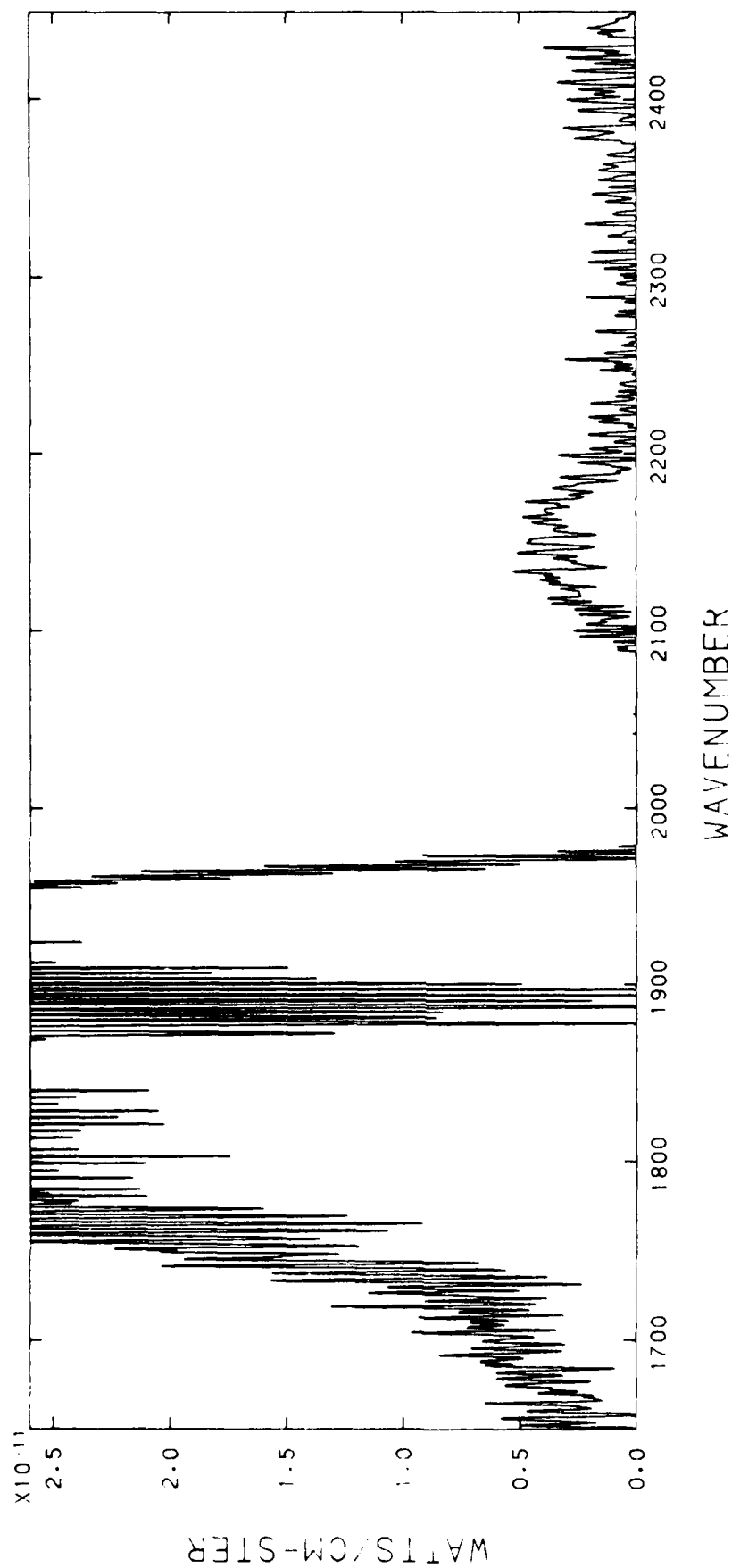


FILE 82, TIME 9: 9:55.428, ALT 136.3-135.9 KM

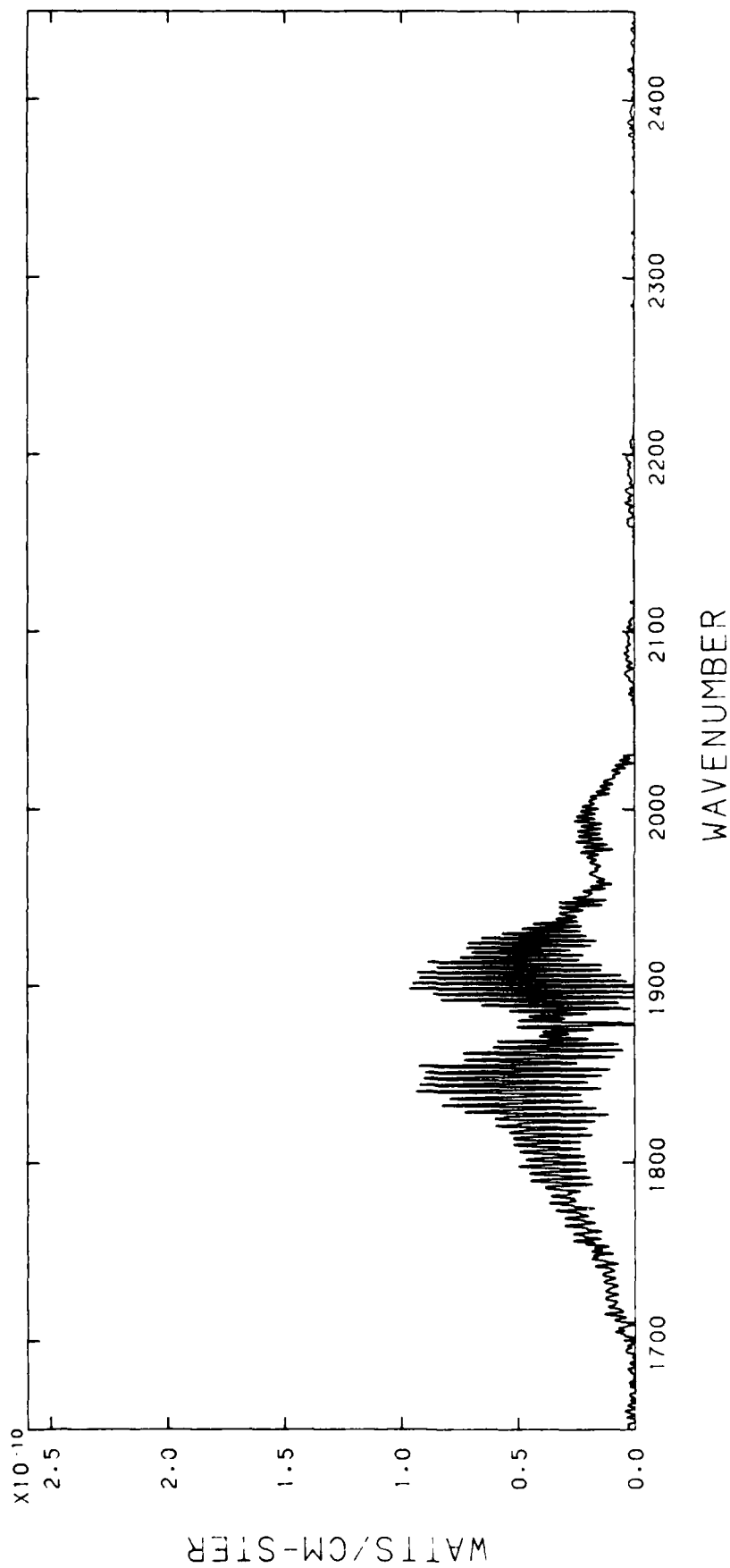


FILE 83, TIME 9: 9:57. 52, ALT 135.9-135.5 KM

24-NOV 83 00:34

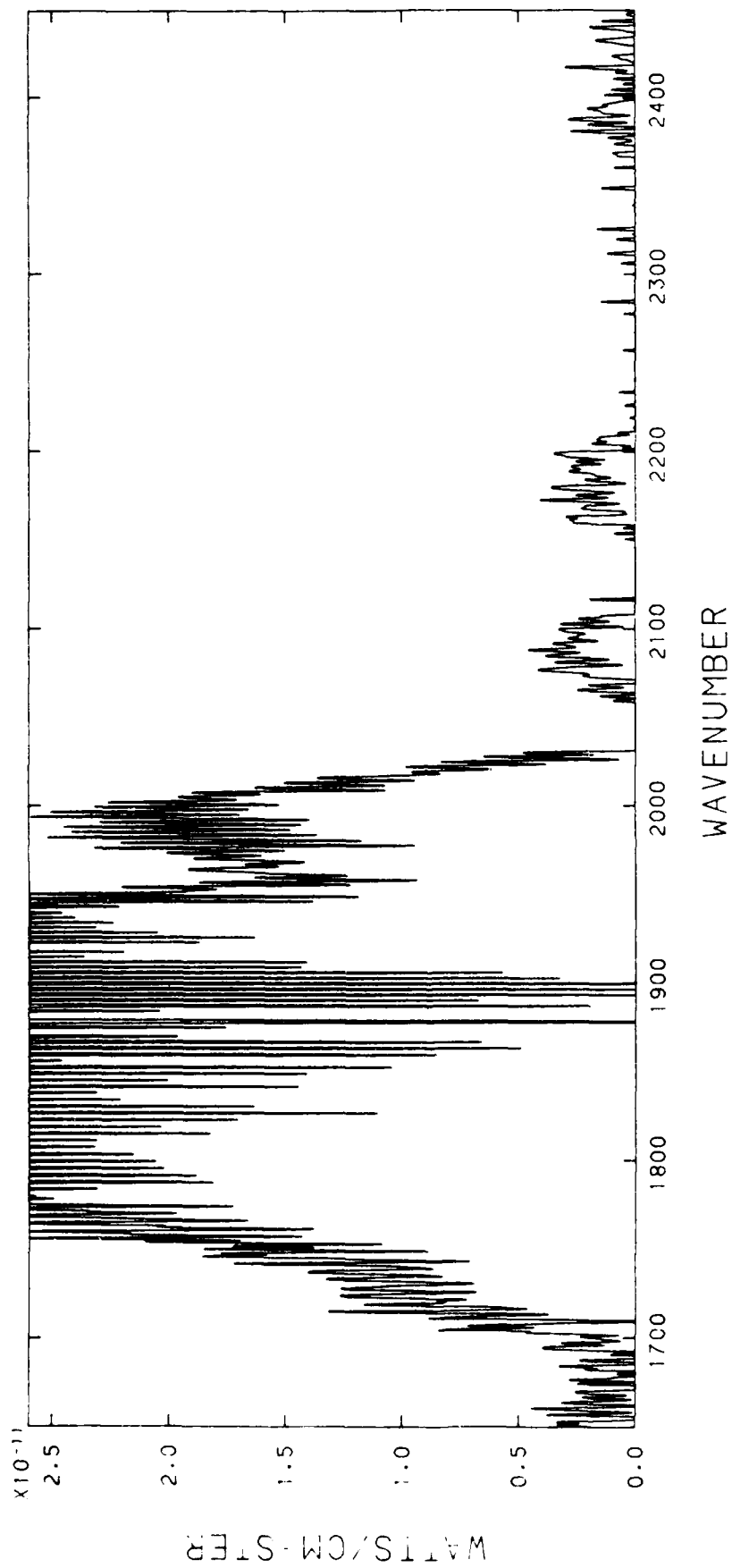


FILE 83, TIME 9: 9:57. 52, ALT 135.9-135.5 KM



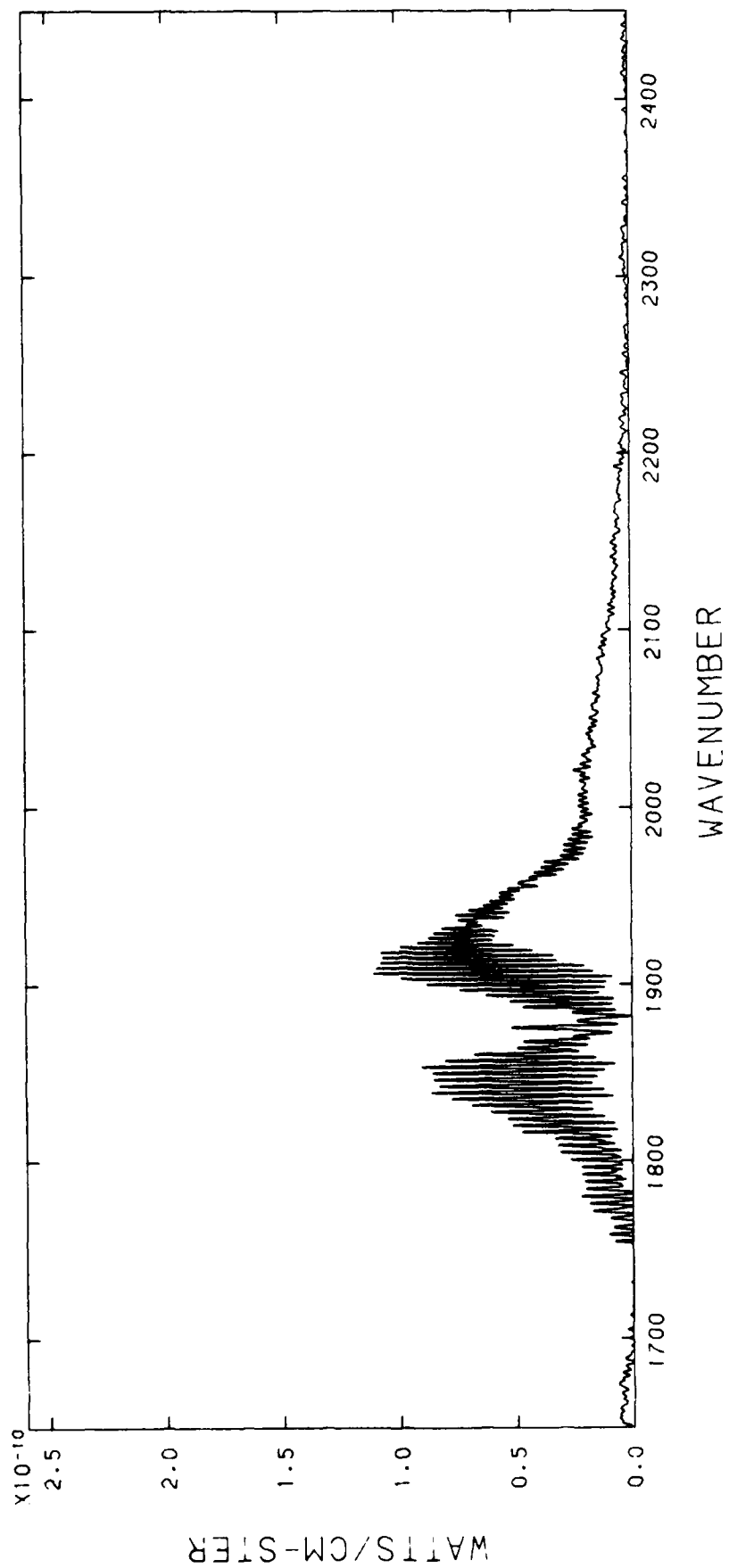
FILE 84, TIME 9: 9:58.678, ALT 135.5-135.0 KM

24-NOV-83 00:34



FILE 84, TIME 9: 9:58.678, ALT 135.5-135.0 KM

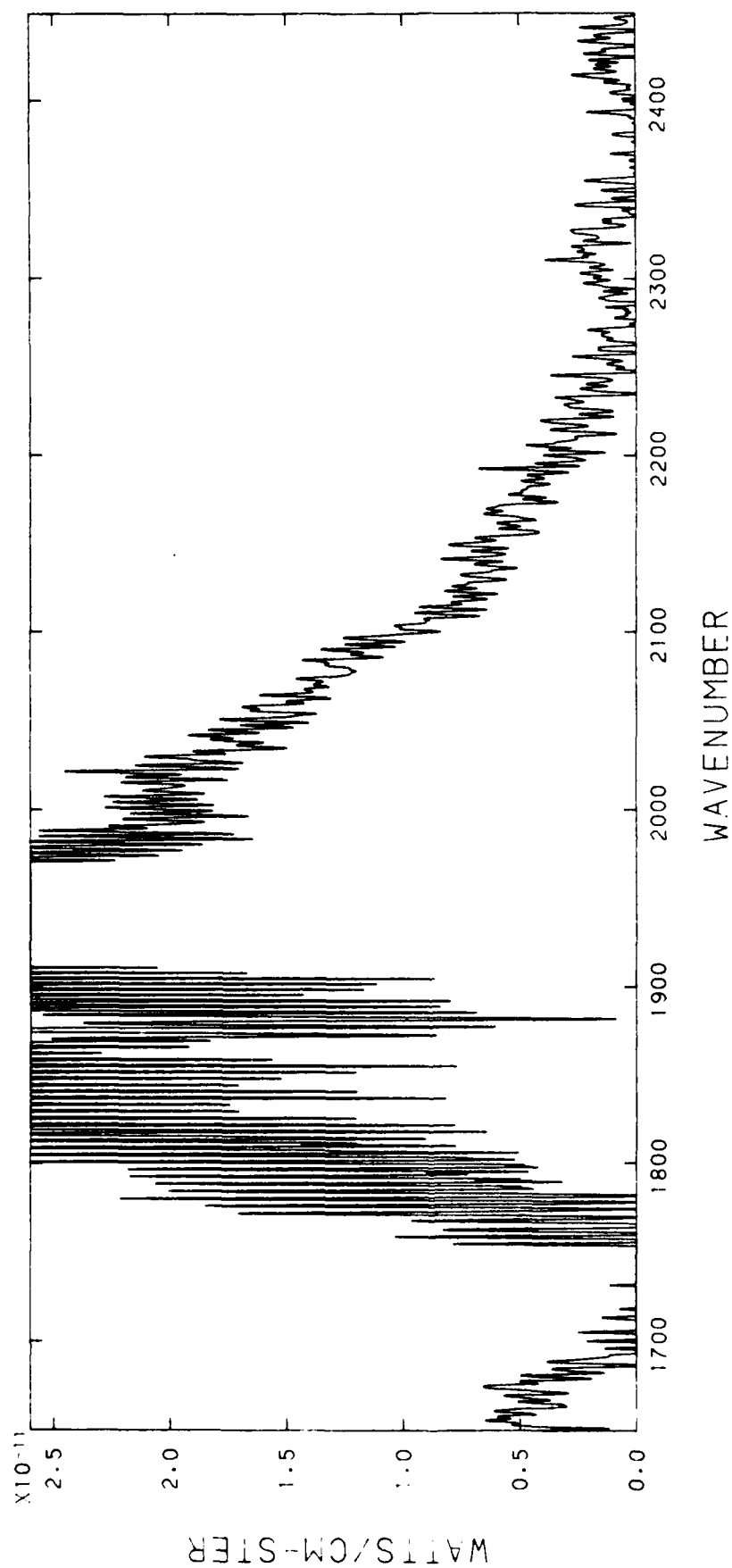
24-NOV-83 00:34



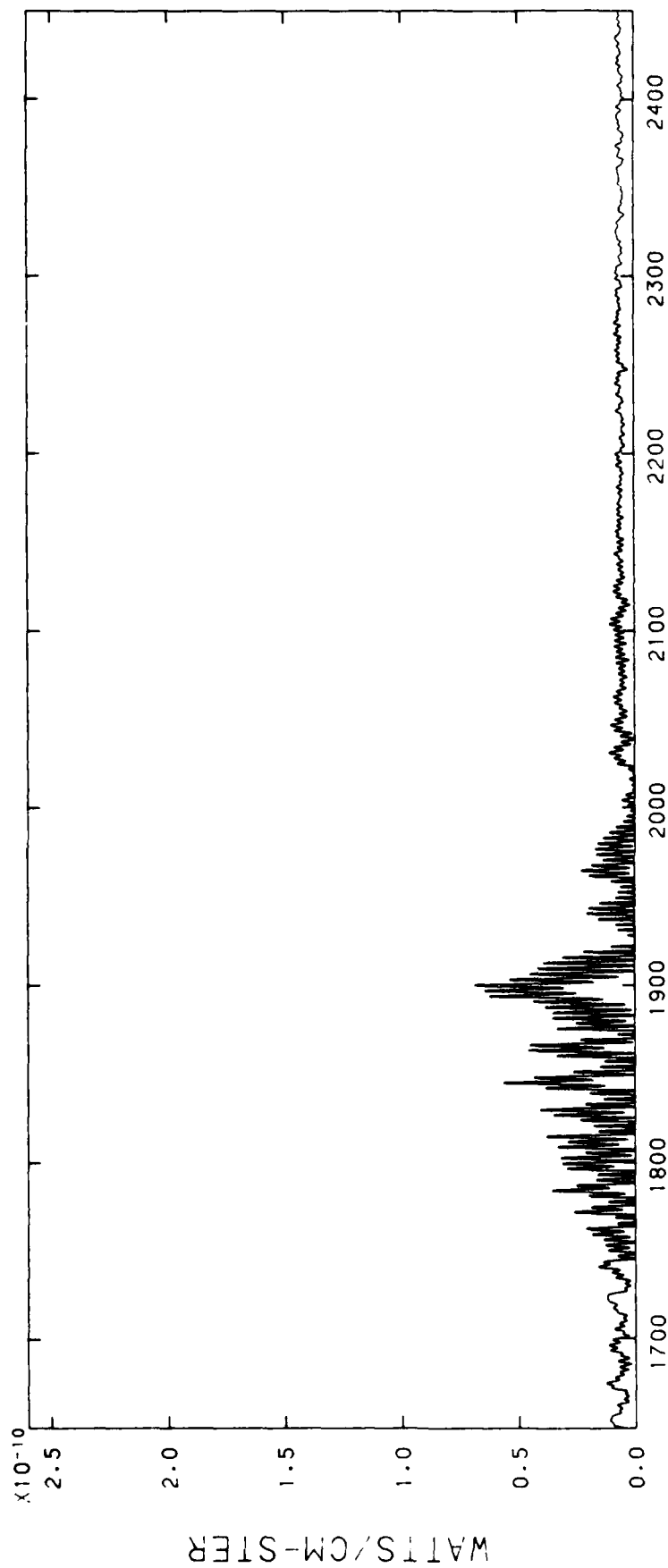
FILE 85, TIME 9:10: 0.306, ALT 135.0-134.6 KM

24-NOV-83 00:34





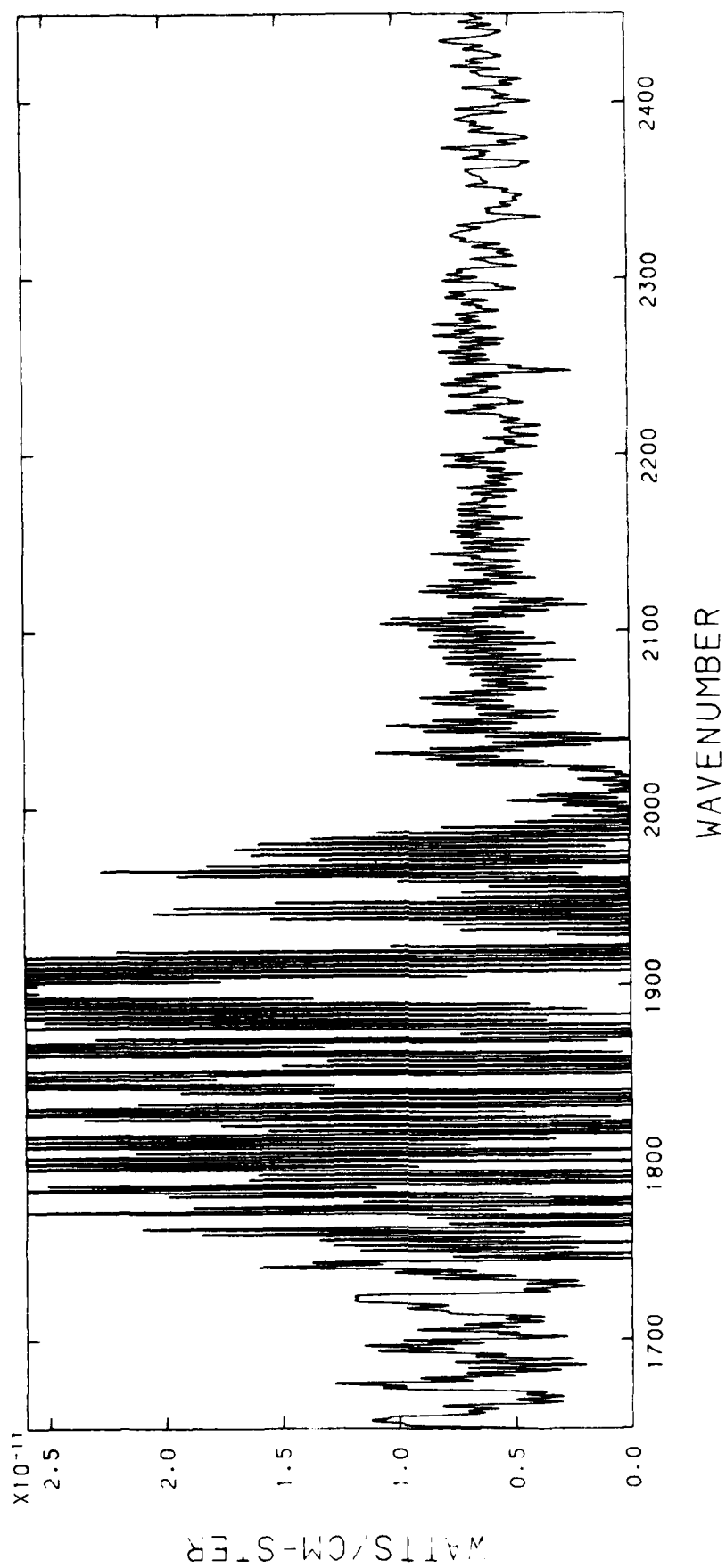
FILE 85, TIME 9:10: 0.306, ALT 135.0-134.6 KM



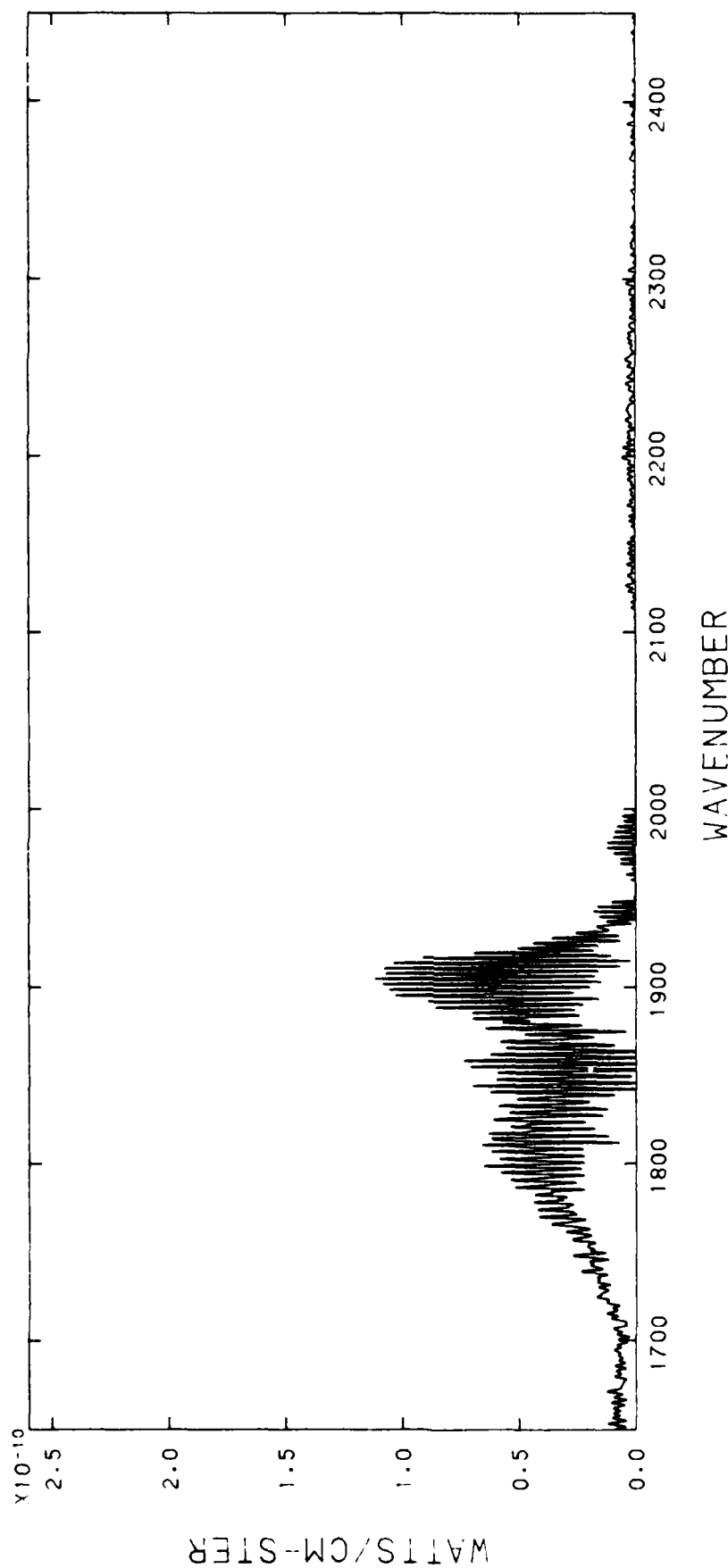
WAVENUMBER

FILE 86, TIME 9:10: 1.928, ALT 134.6-134.1 KM

24-NOV-83 00:34

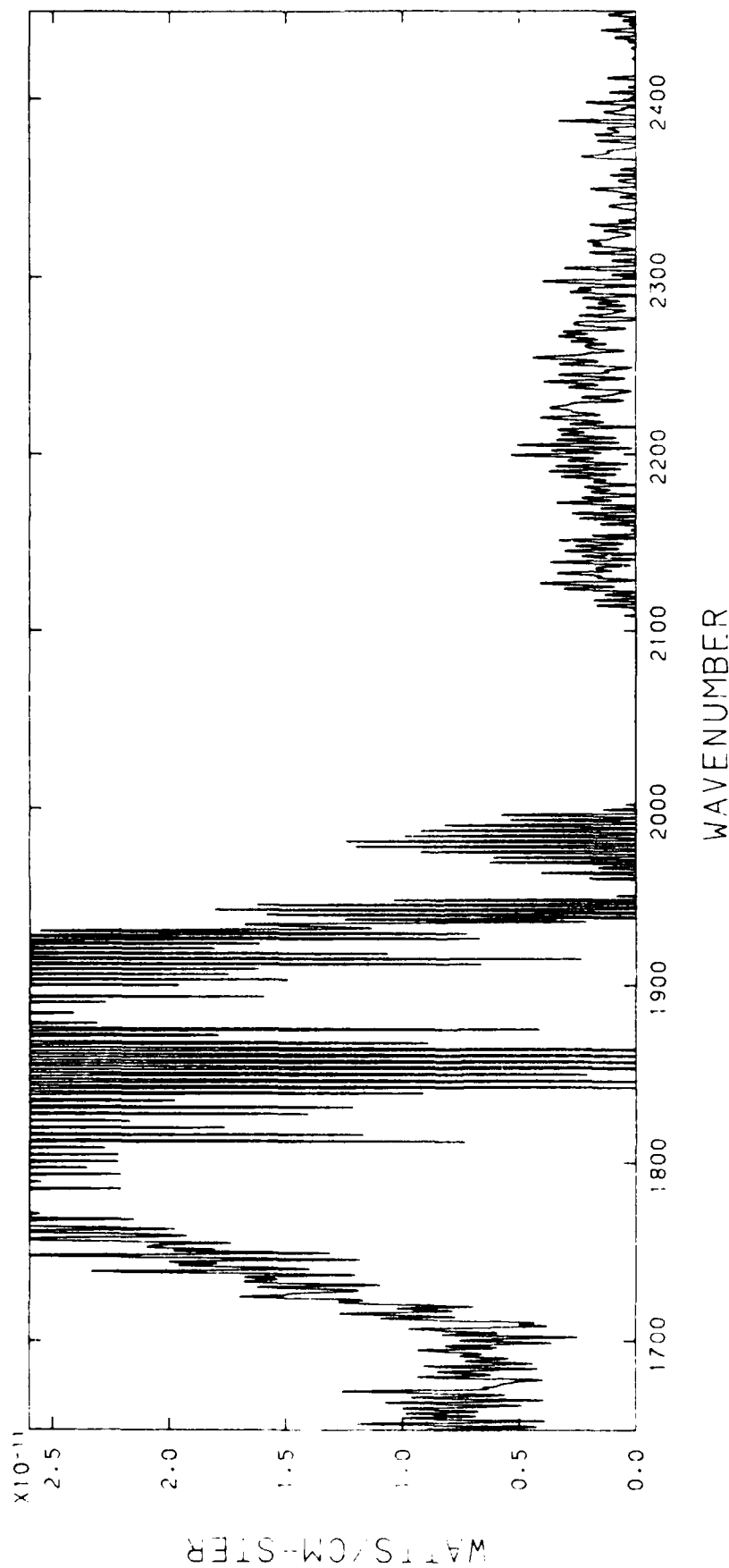


FILE 86, TIME 9:10: 1.928, ALT 134.6-134.1 KM

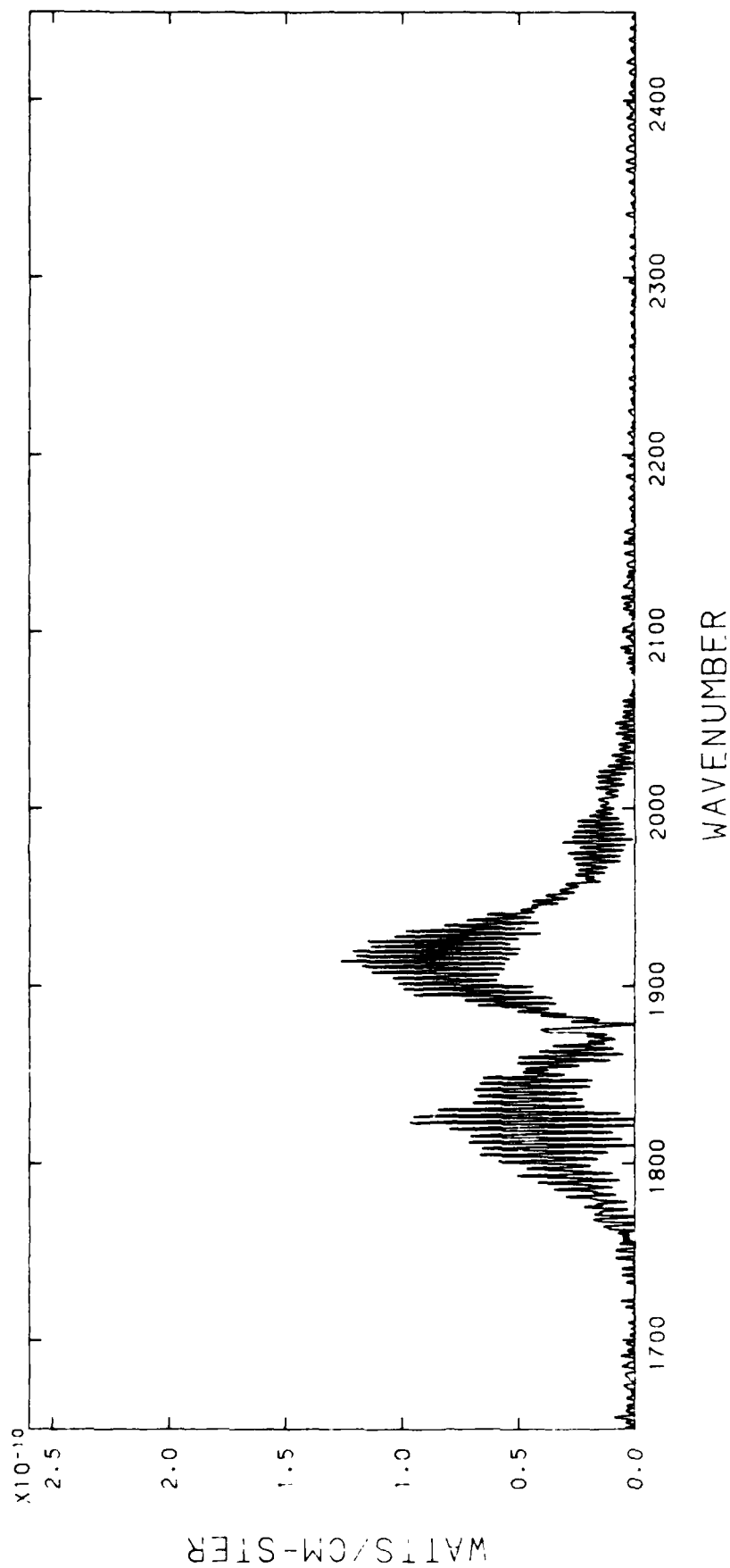


FILE 87. TIME 9:10: 3.562, ALT 134.1-133.5 KM

24-NOV-83 00:35



FILF 87, TIME 9:10: 3.562, ALT 134.1--133.5 KM



FILE 88, TIME 9:10: 5.188, ALT 133.5-133.0 KM

24-NOV-83 00:35

AD-A197 181

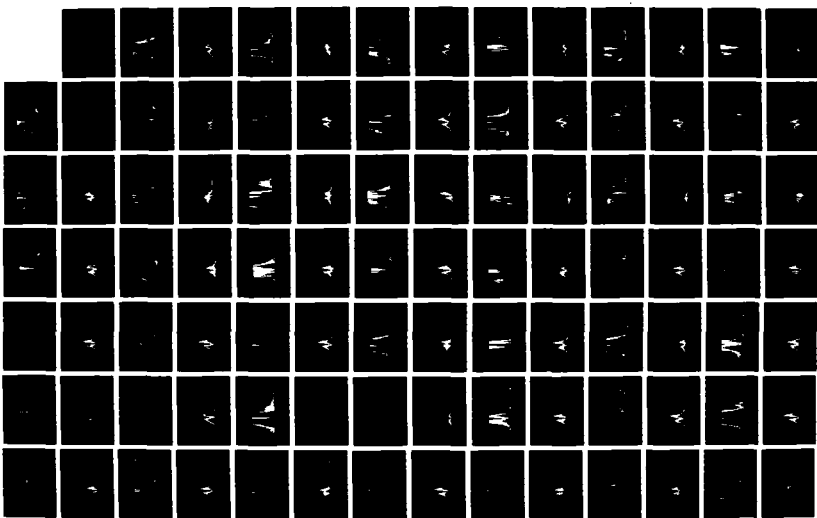
CATALOG OF HIGH RESOLUTION INFRARED SPECTRA:  
FIELD-WIDENED INTERFEROMETER. (U) NOTRE DAME UNIV IN  
DEPT OF CIVIL ENGINEERING R H HAYCOCK ET AL. 26 JUN 85

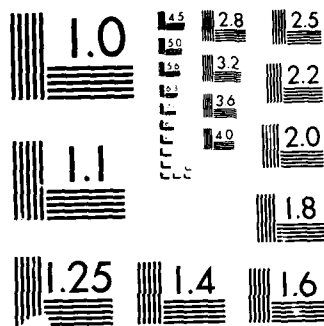
3/4

UNCLASSIFIED

SDL/85-045 AFGL-TR-85-0161 F19628-83-C-0056 F/G 17/5.1

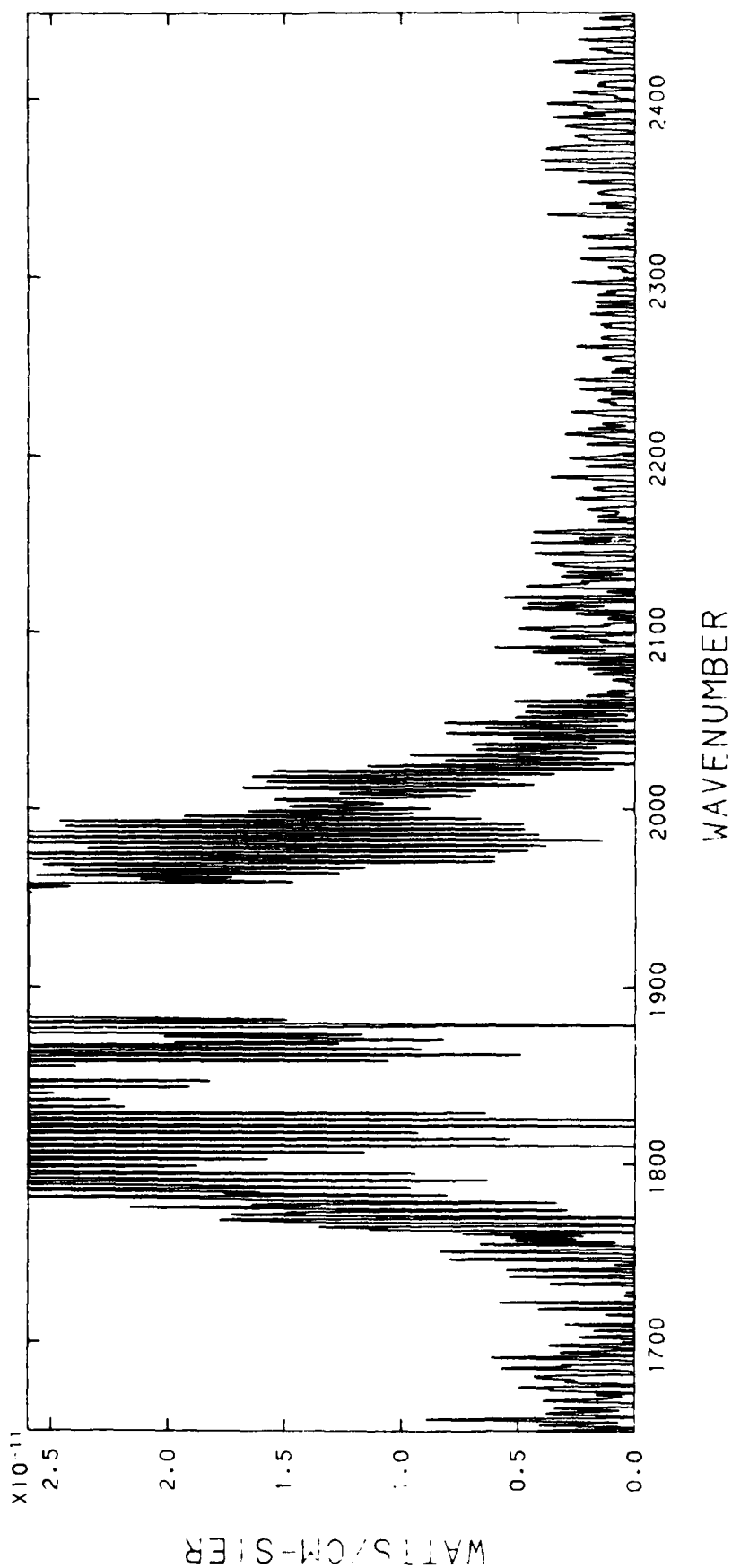
NL



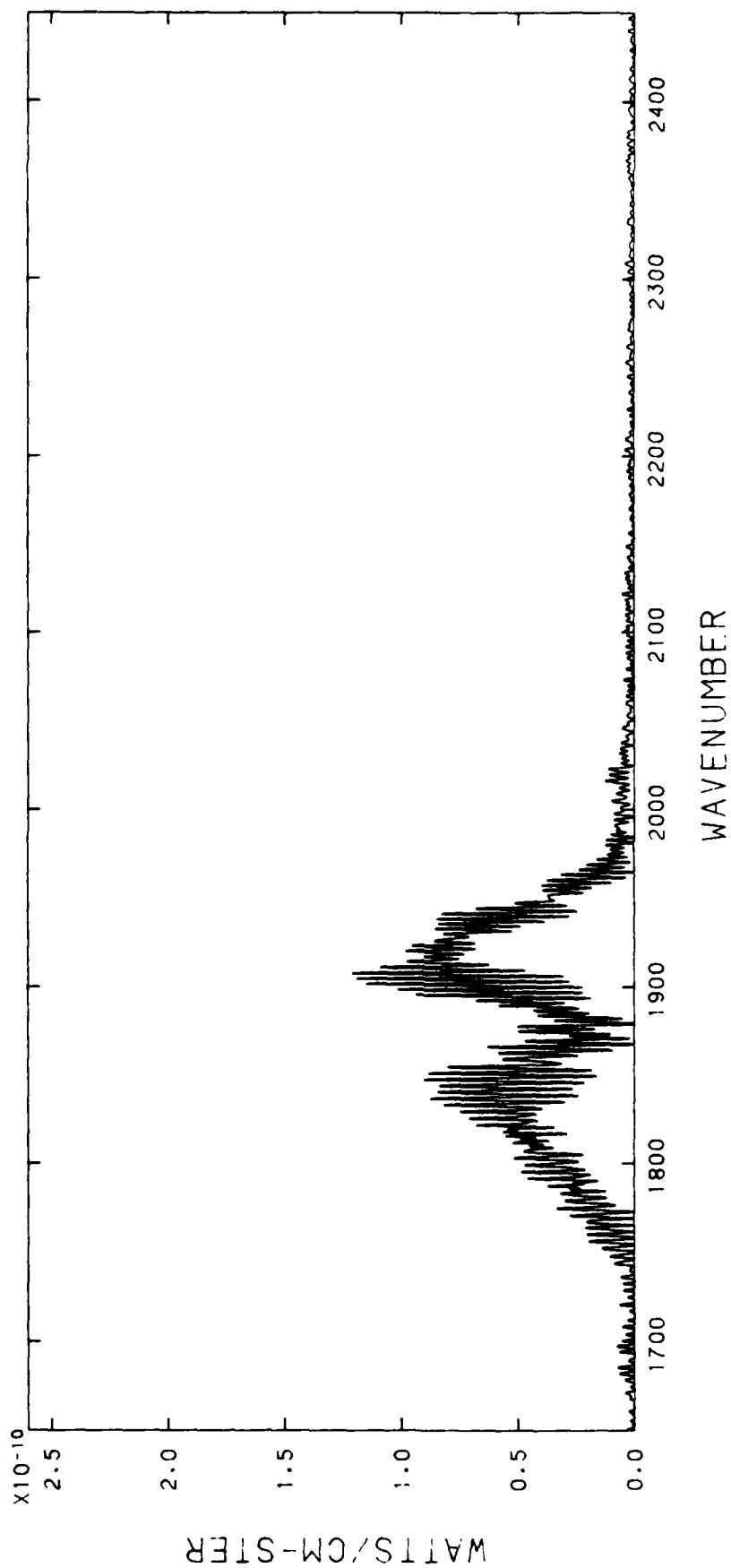


UTION TEST CHAR



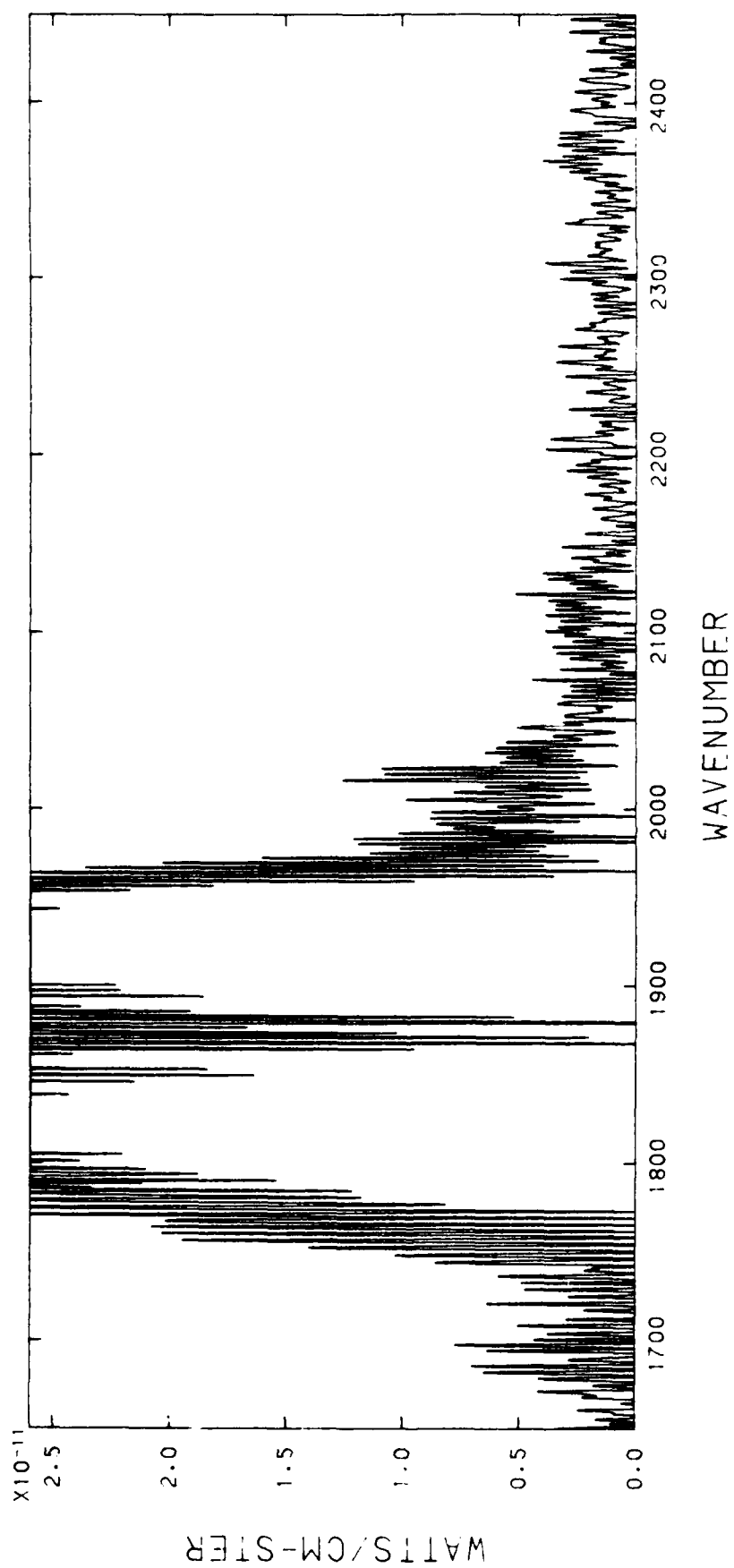


FILE 88, TIME 9:10: 5.188, ALT 133.5-133.0 KM

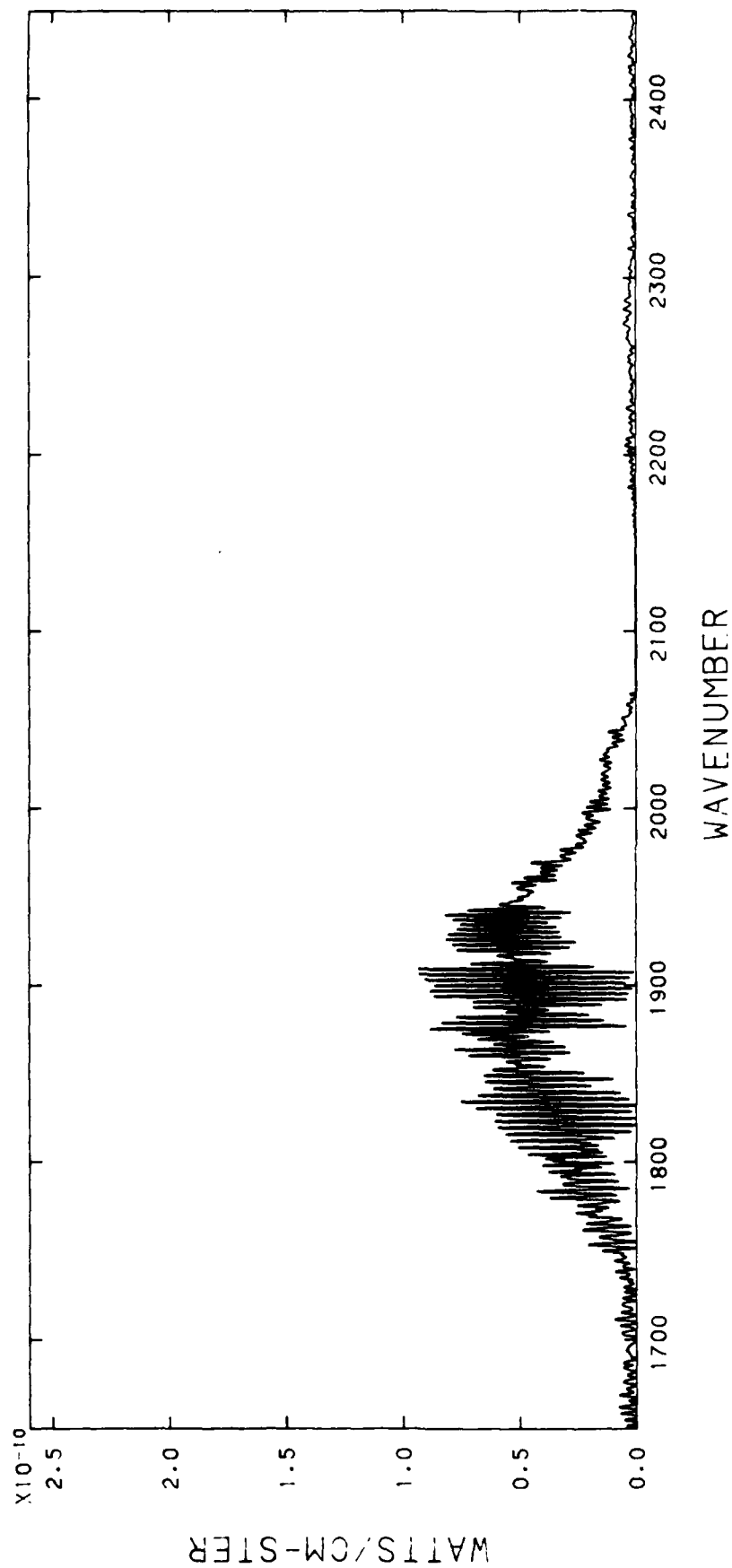


FILE 89, TIME 9:10: 6.814, ALT 133.0-132.4 KM

24-NOV-83 00:35

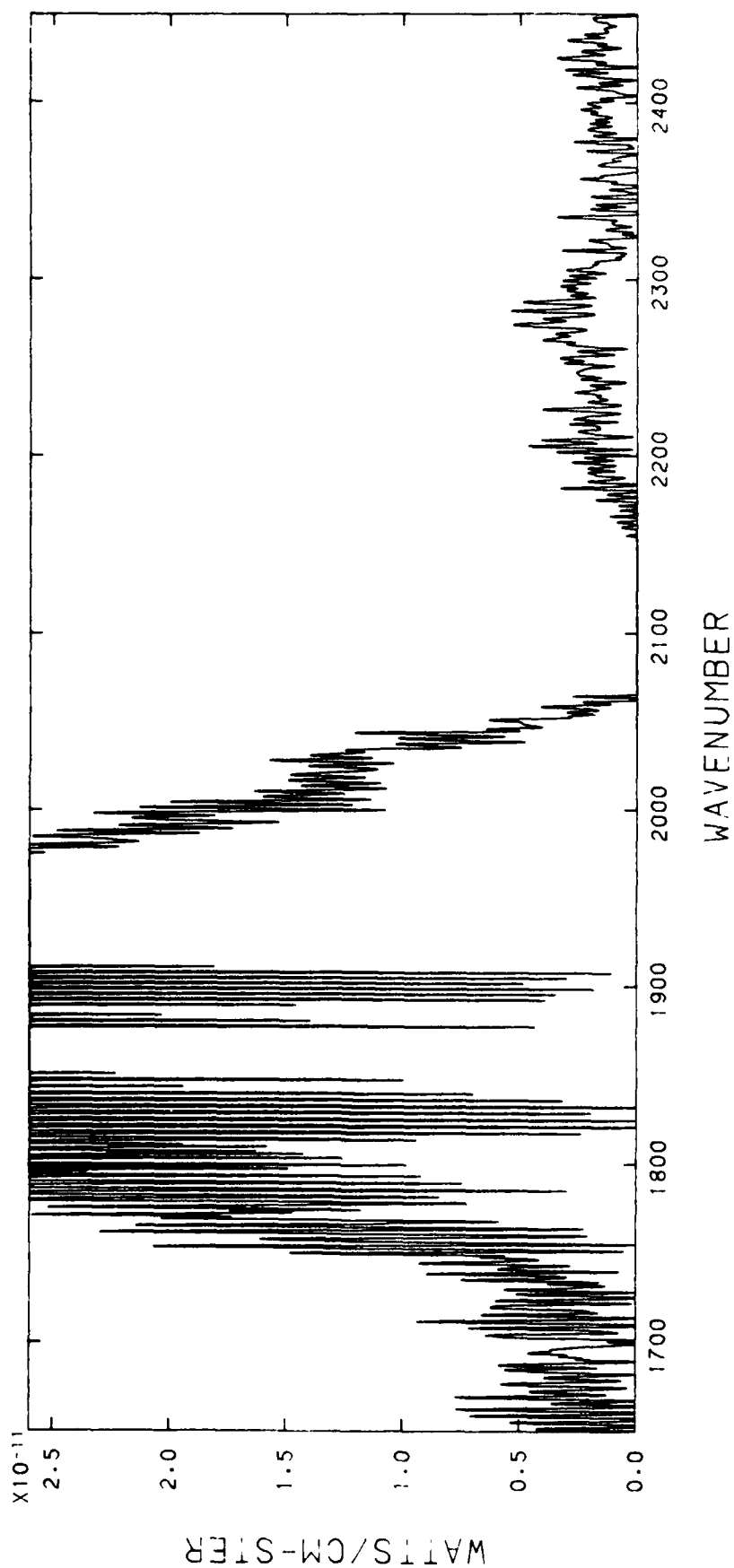


FILE 89, TIME 9:10: 6.814, ALT 133.0-132.4 KM

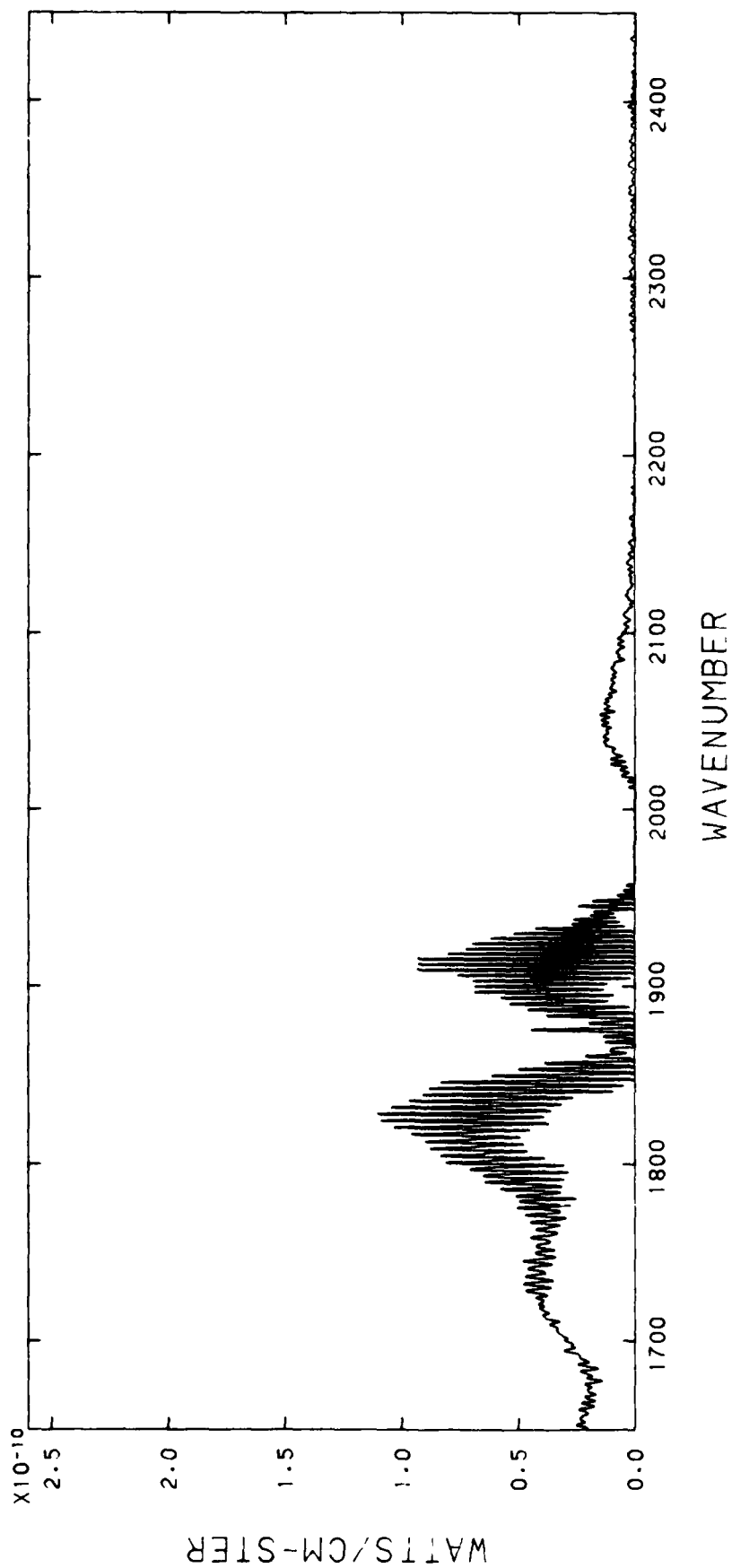


FILE 90, TIME 9:10: 8.440, ALT 132.4-131.8 KM

24-NOV-83 00:35

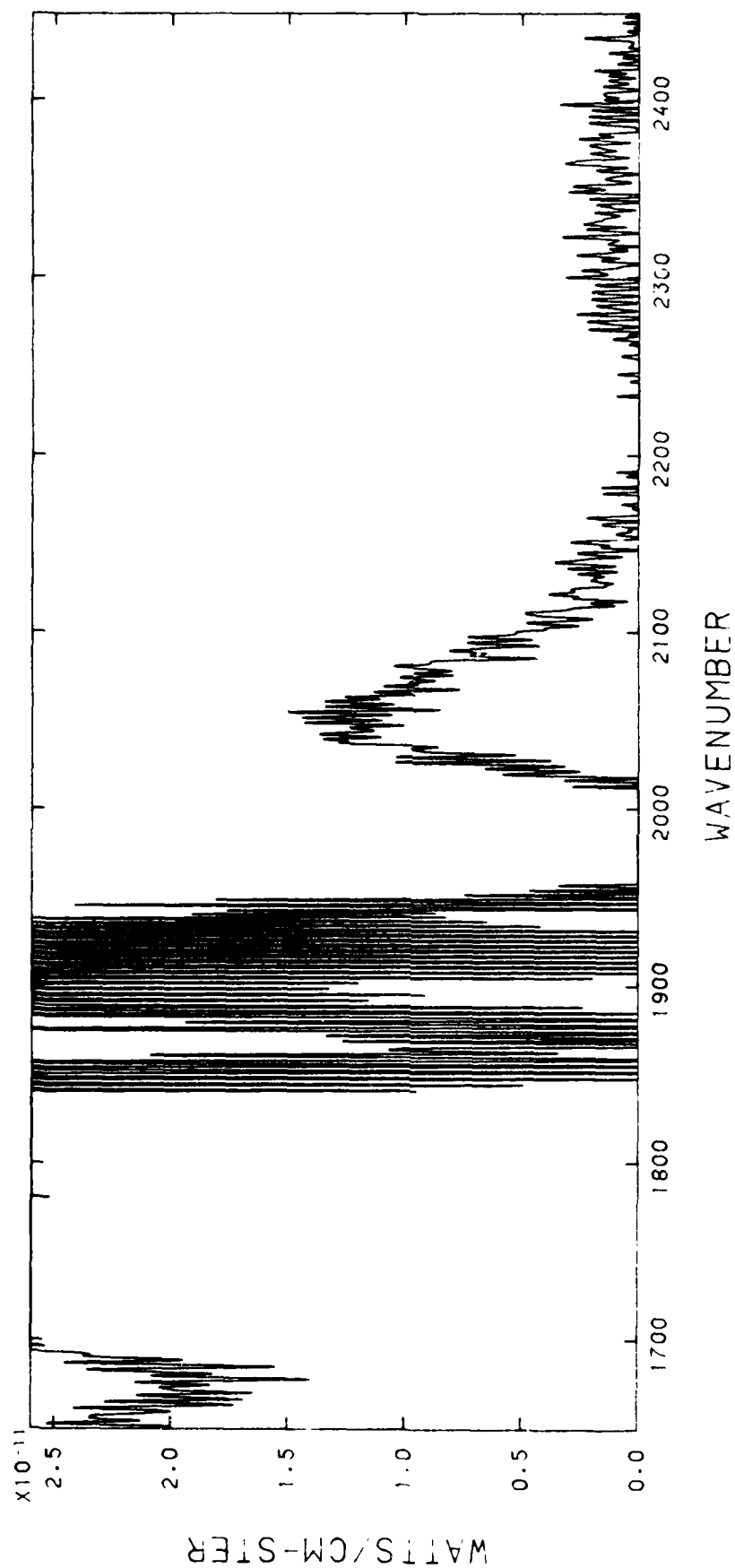


FILE 90, TIME 9:10: 8.440, ALT 132.4--131.8 KM

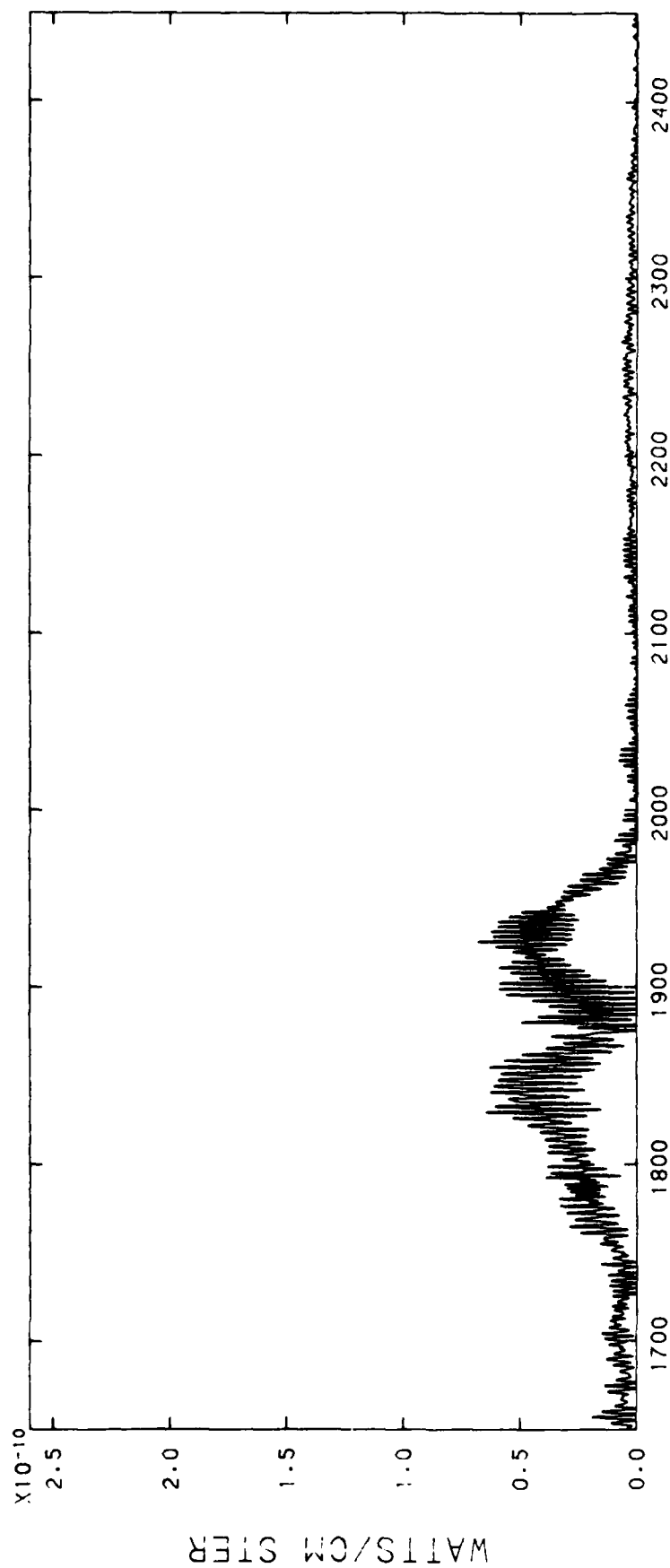


FILE 91, TIME 9:10:10.66, ALT 131.8-131.2 KM

24-NOV-83 00:35



FILE 91, TIME 9:10:10.66, ALT 131.8-131.2 KM

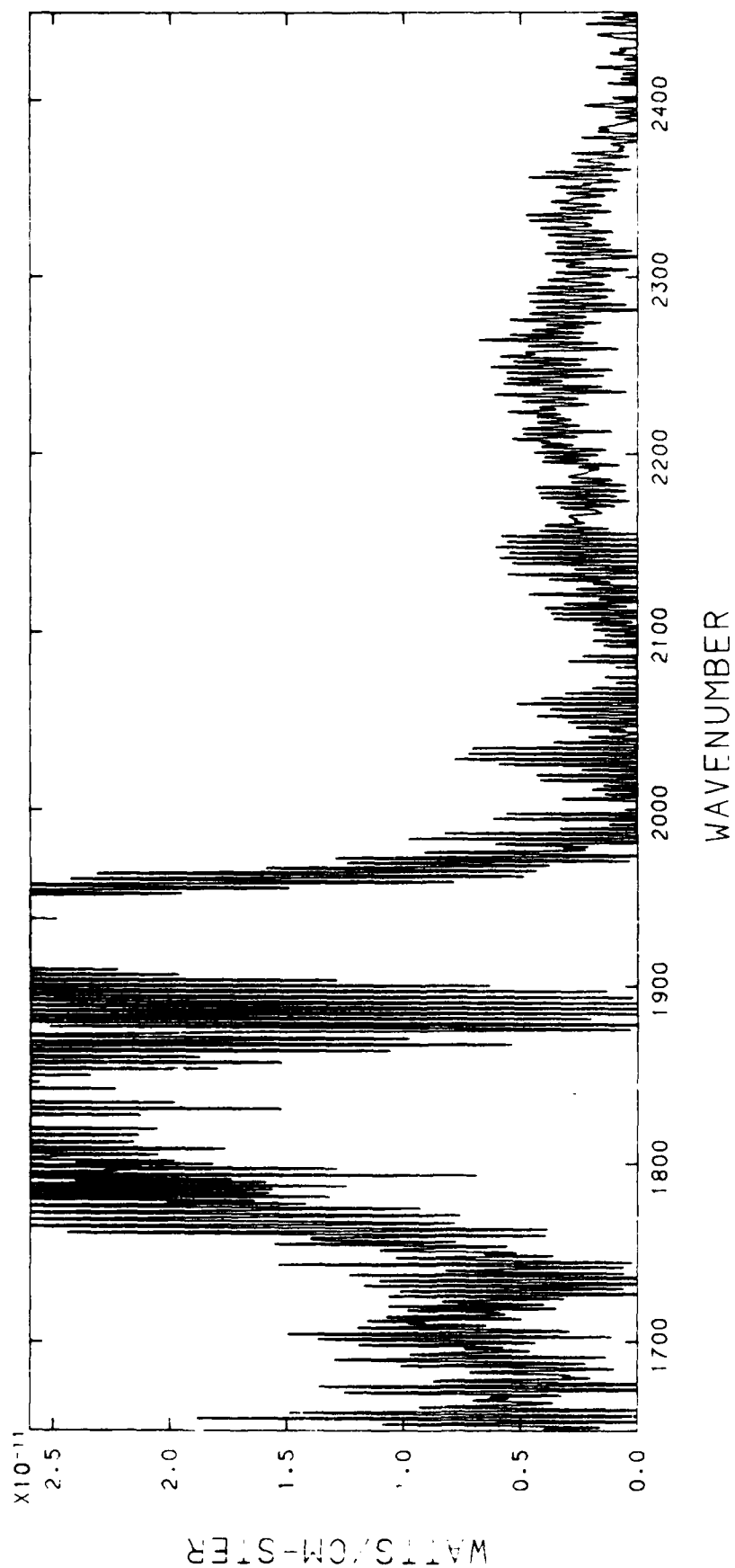


WAVENUMBER

FILE 92, TIME 9:10:11.694, ALT 131.2-130.5 KM

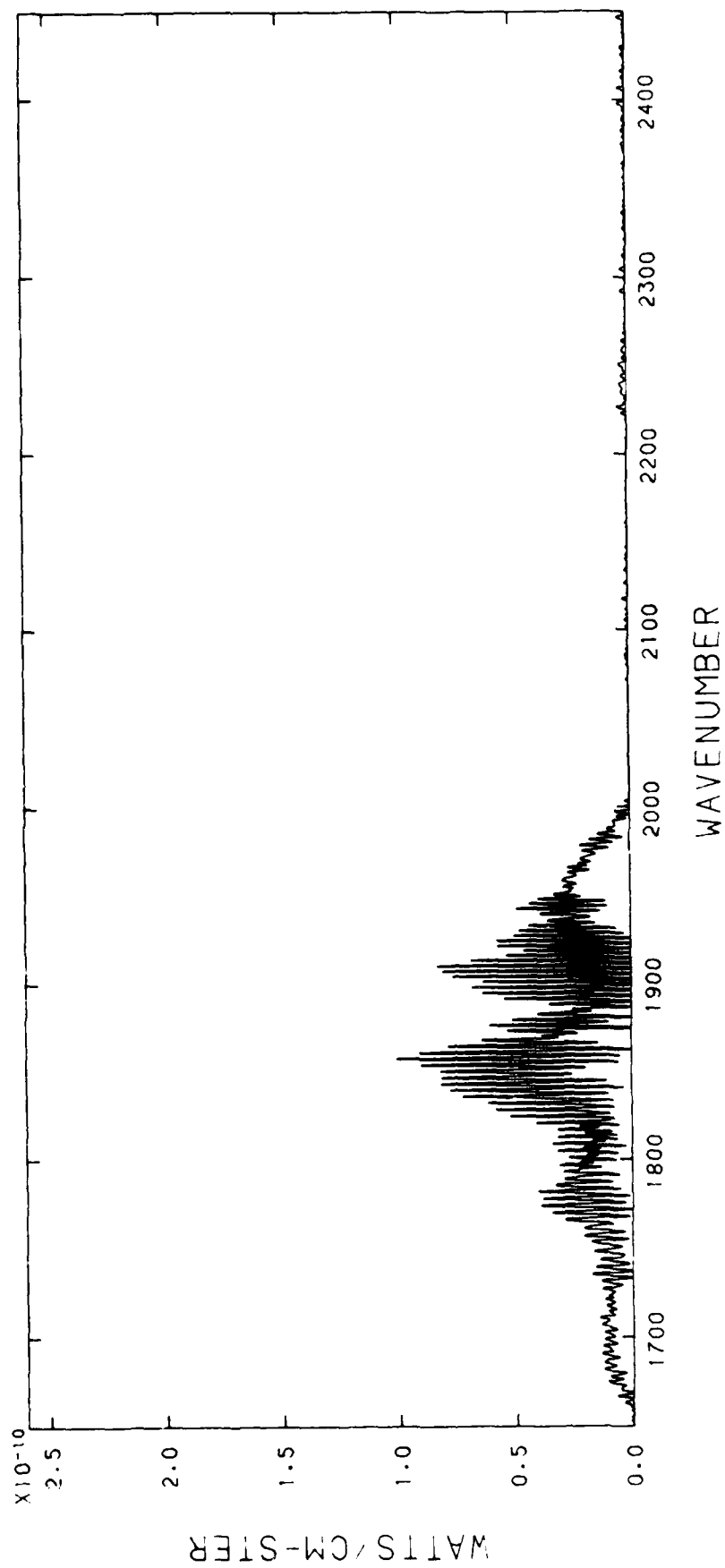
24-NOV-83 00:35





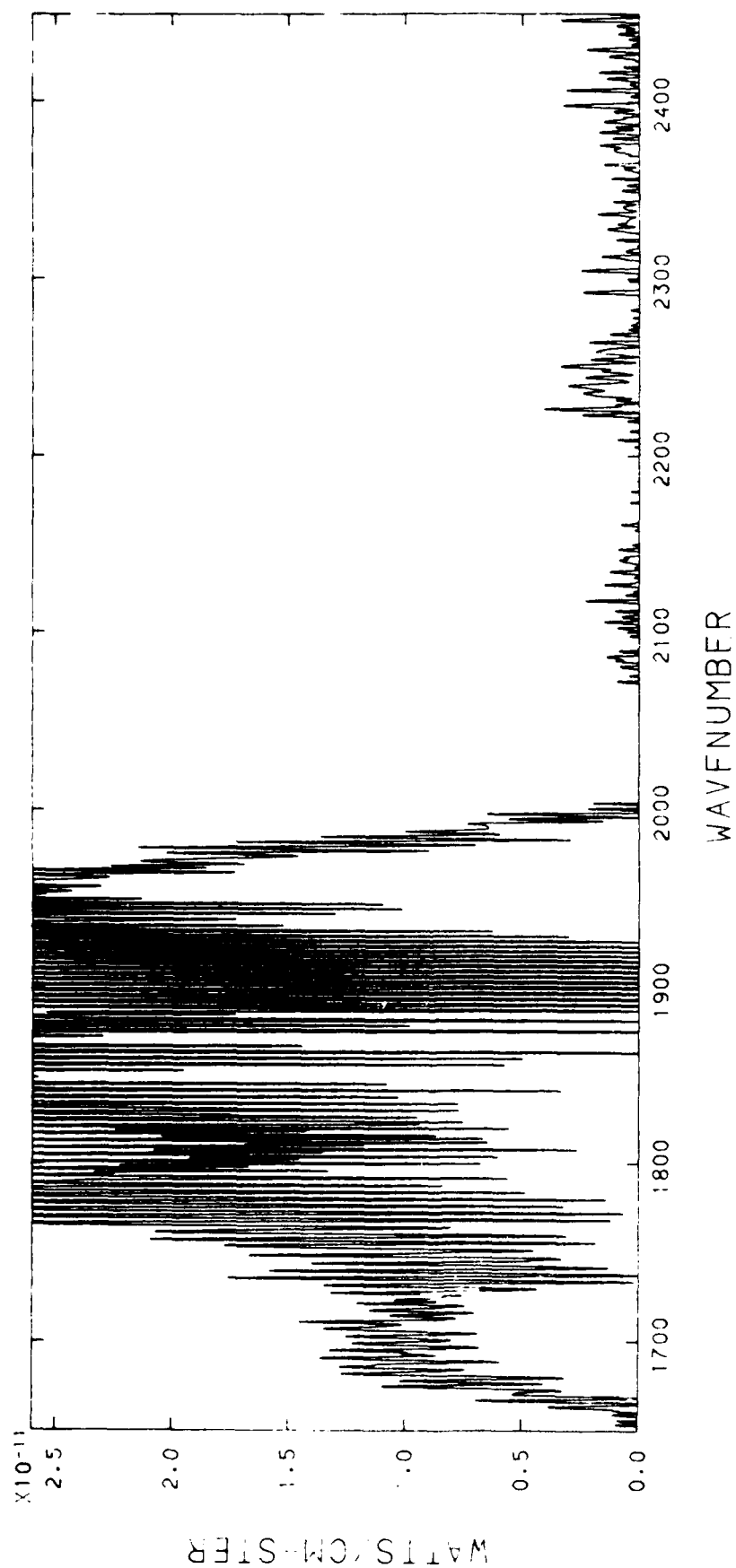
FILE 92, TIME 9:10:11.694, ALT 131.2-130.5 KM

24-NOV-83 00:35



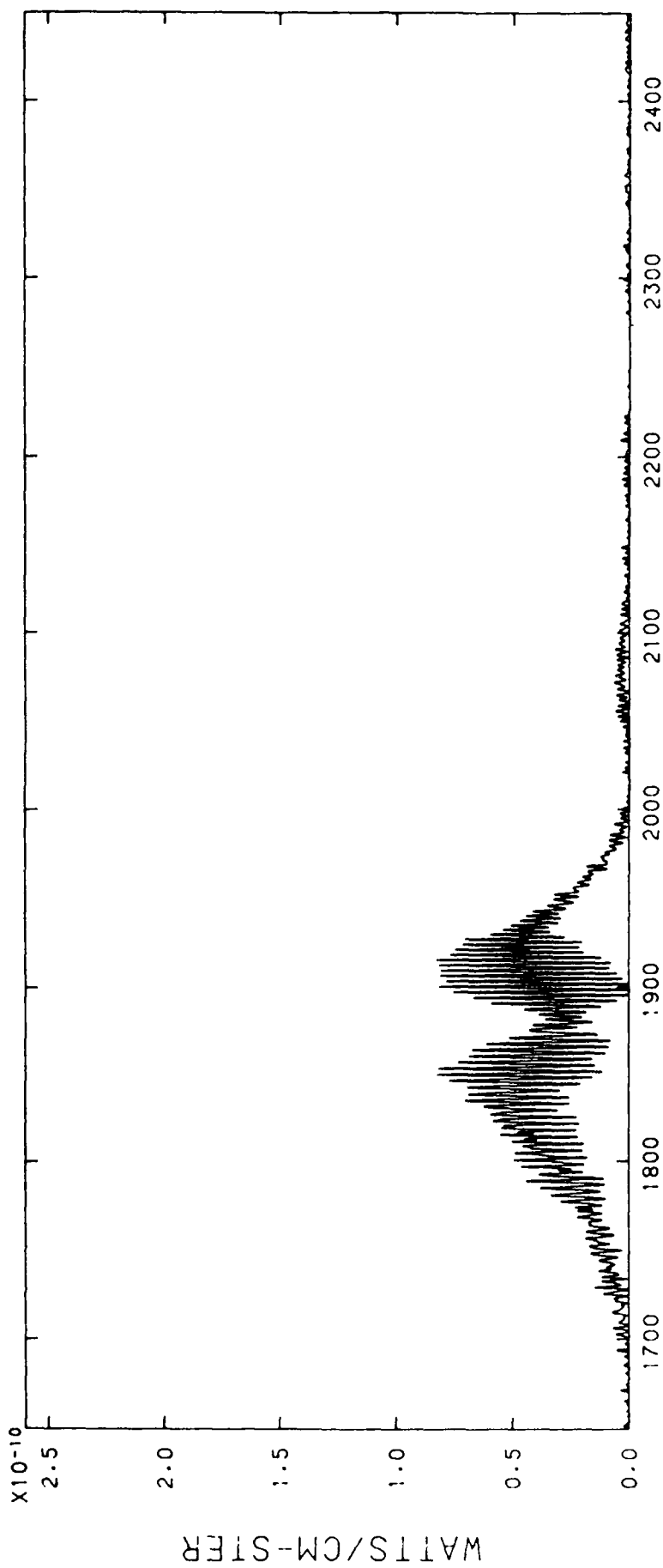
FILE 93. TIME 9:10:13.336, ALT 130.5--129.9 KM

24-NOV-83 00:36



FILE 93, TIME 9:10:13.336, ALT 130.5-129.9 KM

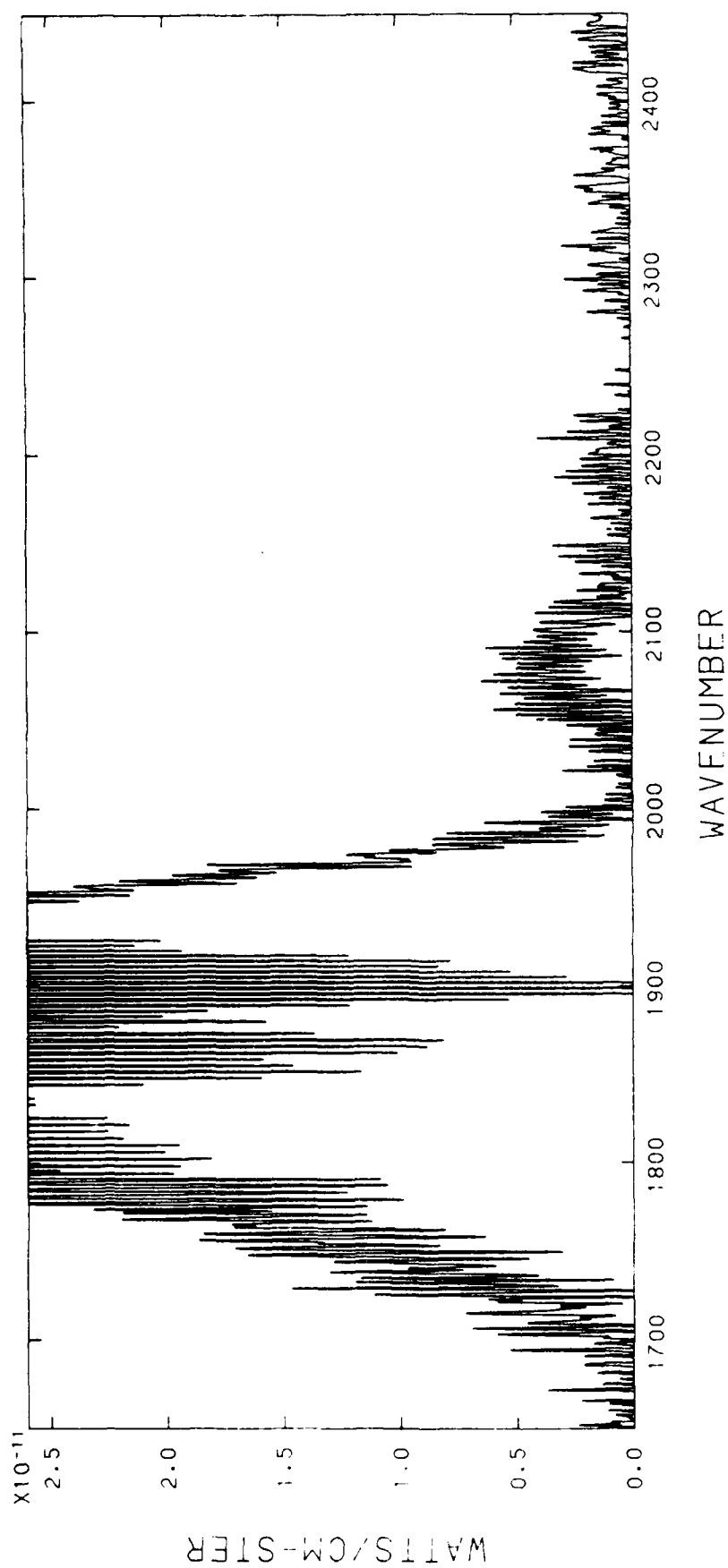
24-NOV-83 00:36



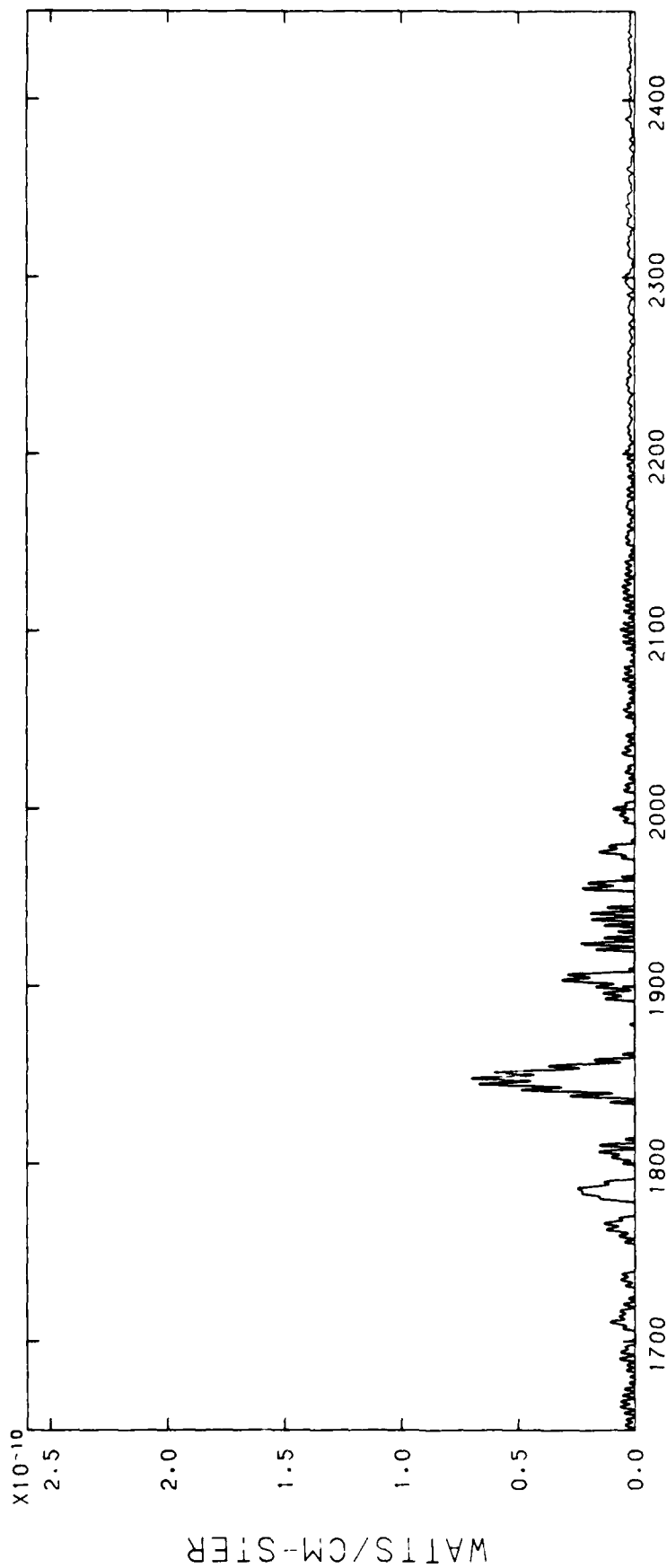
WAVENUMBER

FILE 94, TIME 9:10:14.978, ALT 129.9-129.2 KM

24-NOV-83 00:36



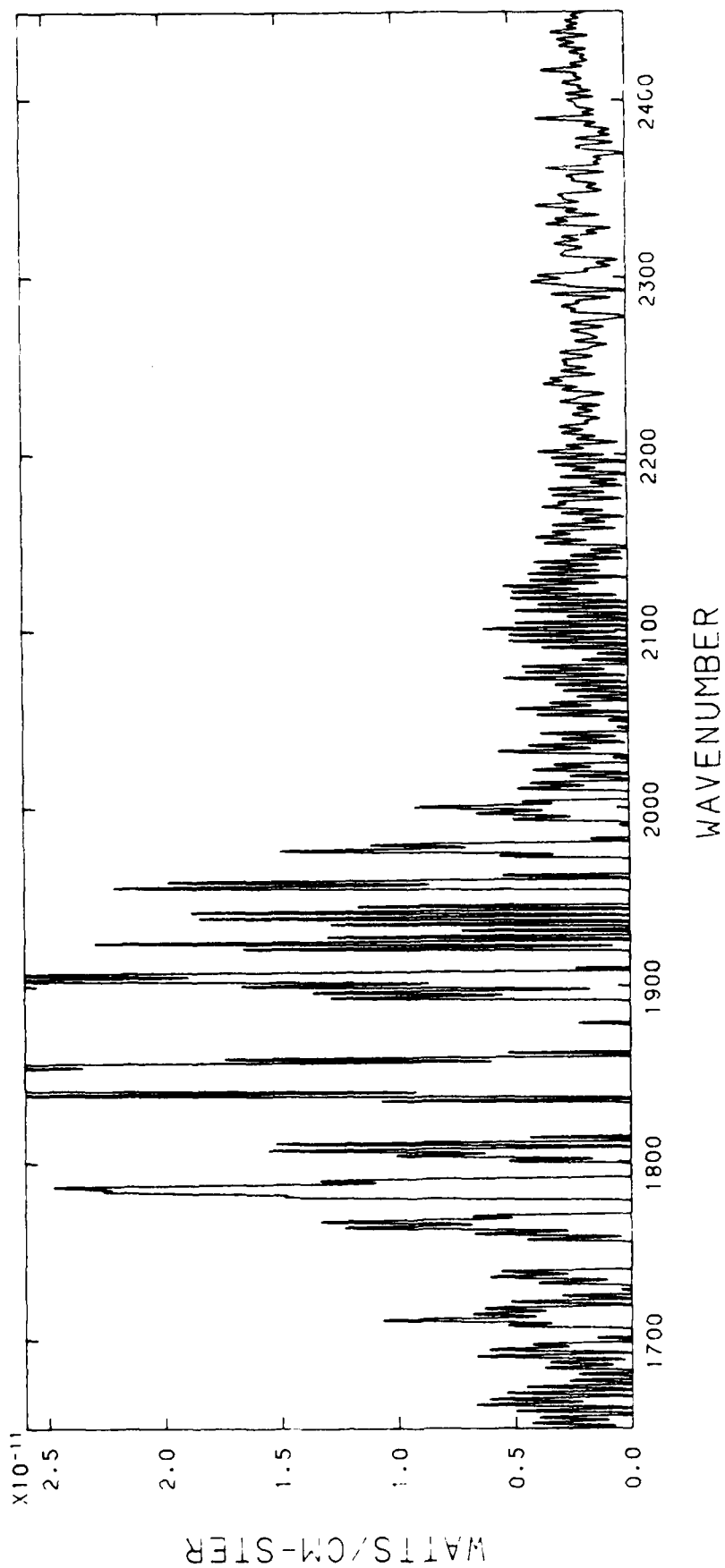
FILE 94, TIME 9:10:14.978, ALT 129.9-129.2 KM



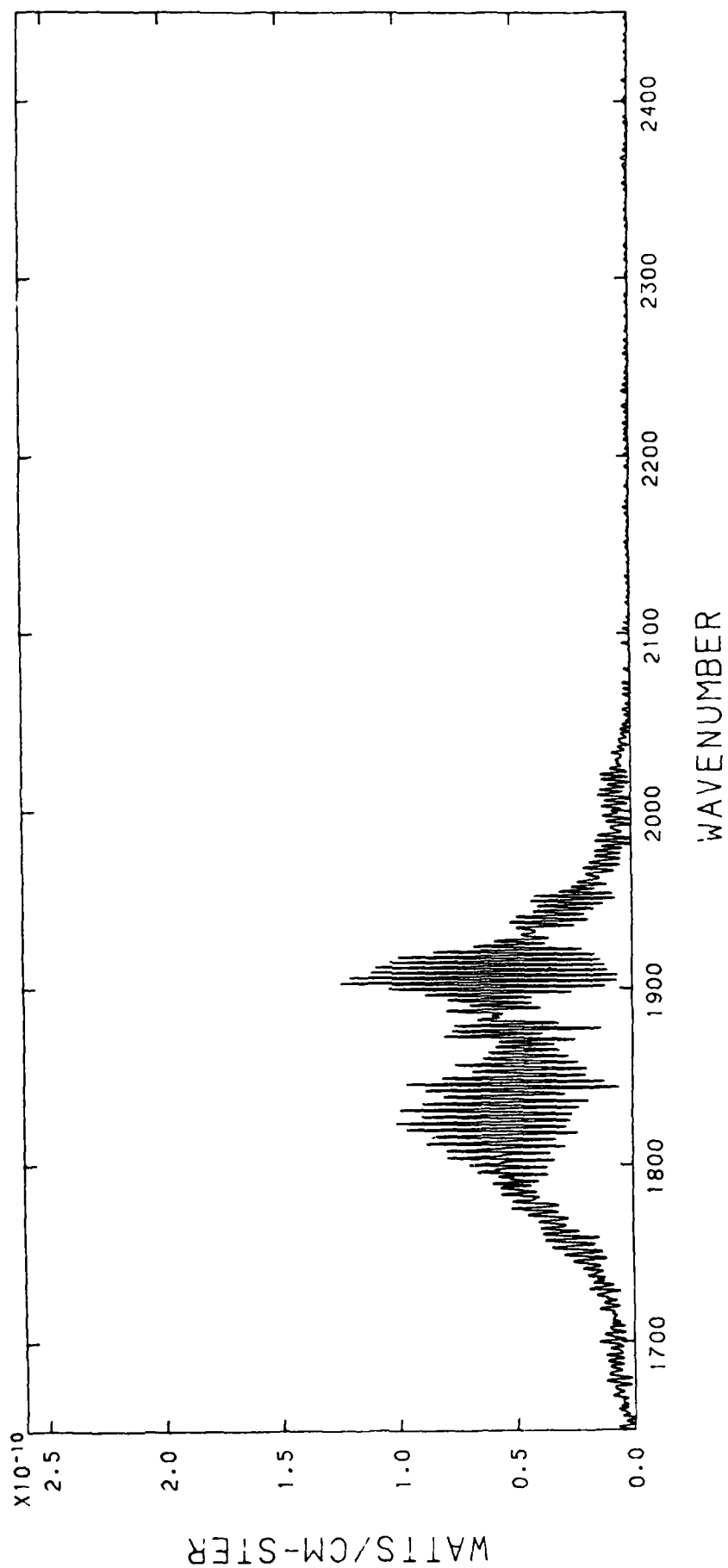
WAVENUMBER

FILE 95, TIME 9:10:16.612, ALT 129.2-128.4 KM

24-NOV-83 00:36



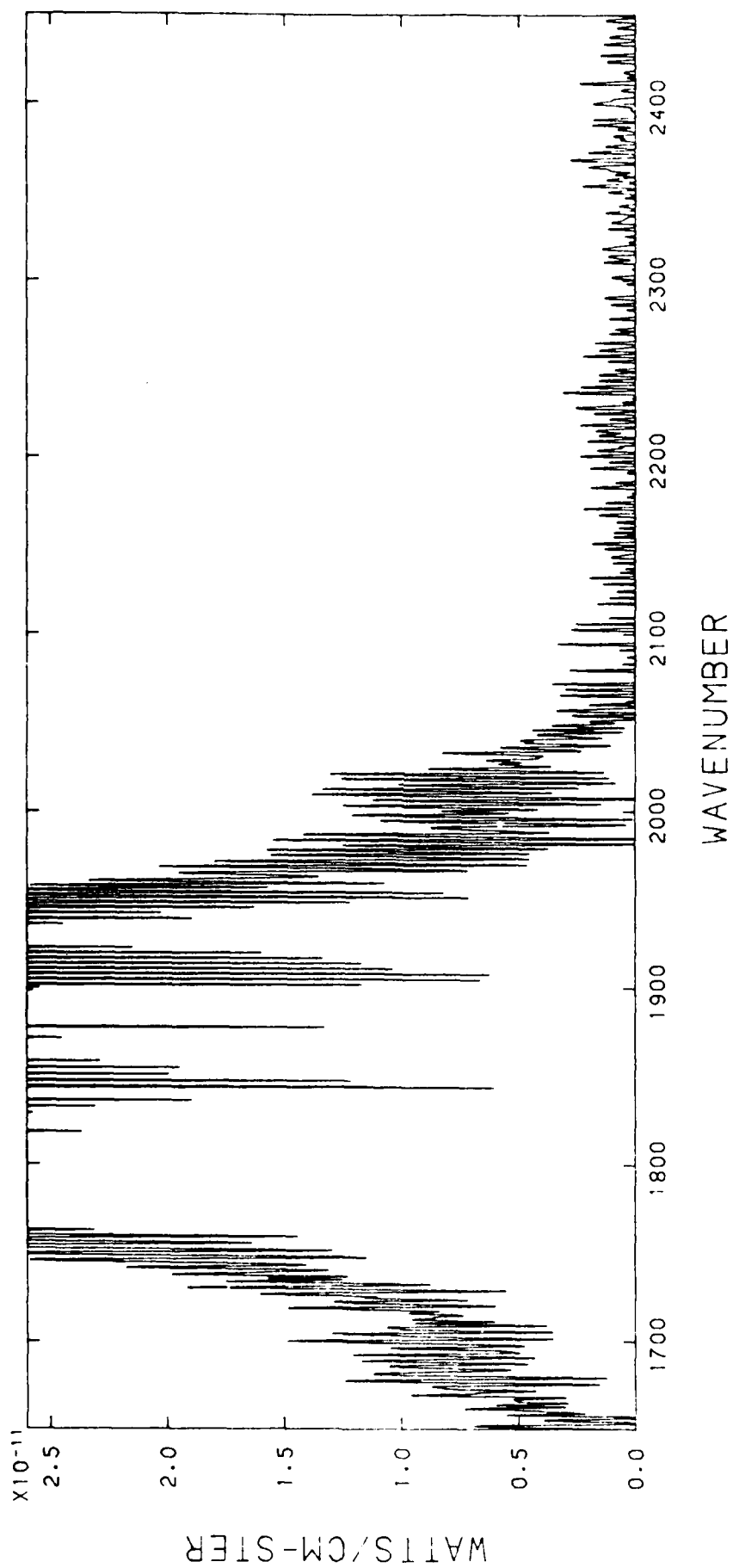
FILE 95, TIME 9:10:16.612, ALT 129.2-128.4 KM



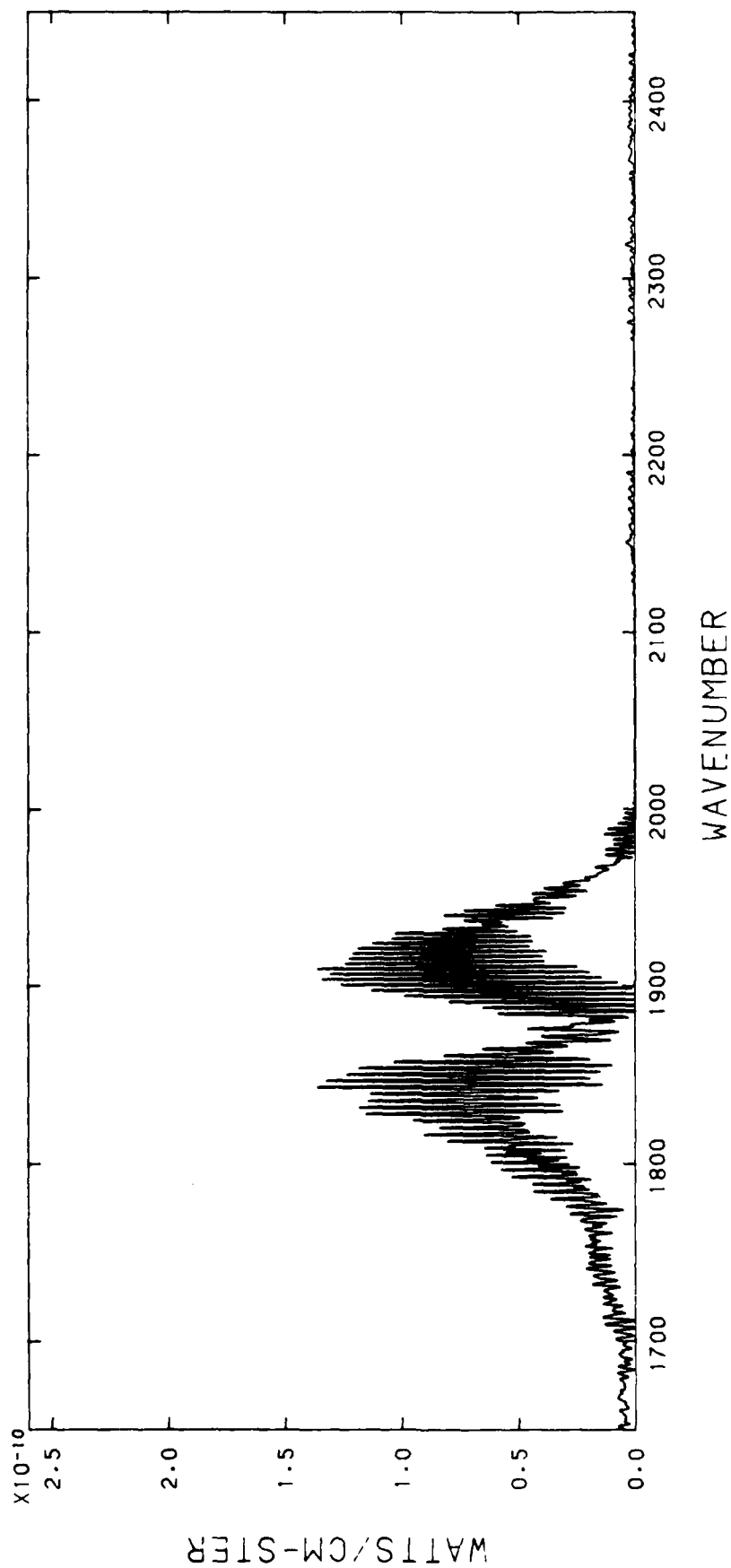
FILE 96, TIME 9:10:18.254, ALT 128.4-127.7 KM

24-NOV-83 00:36



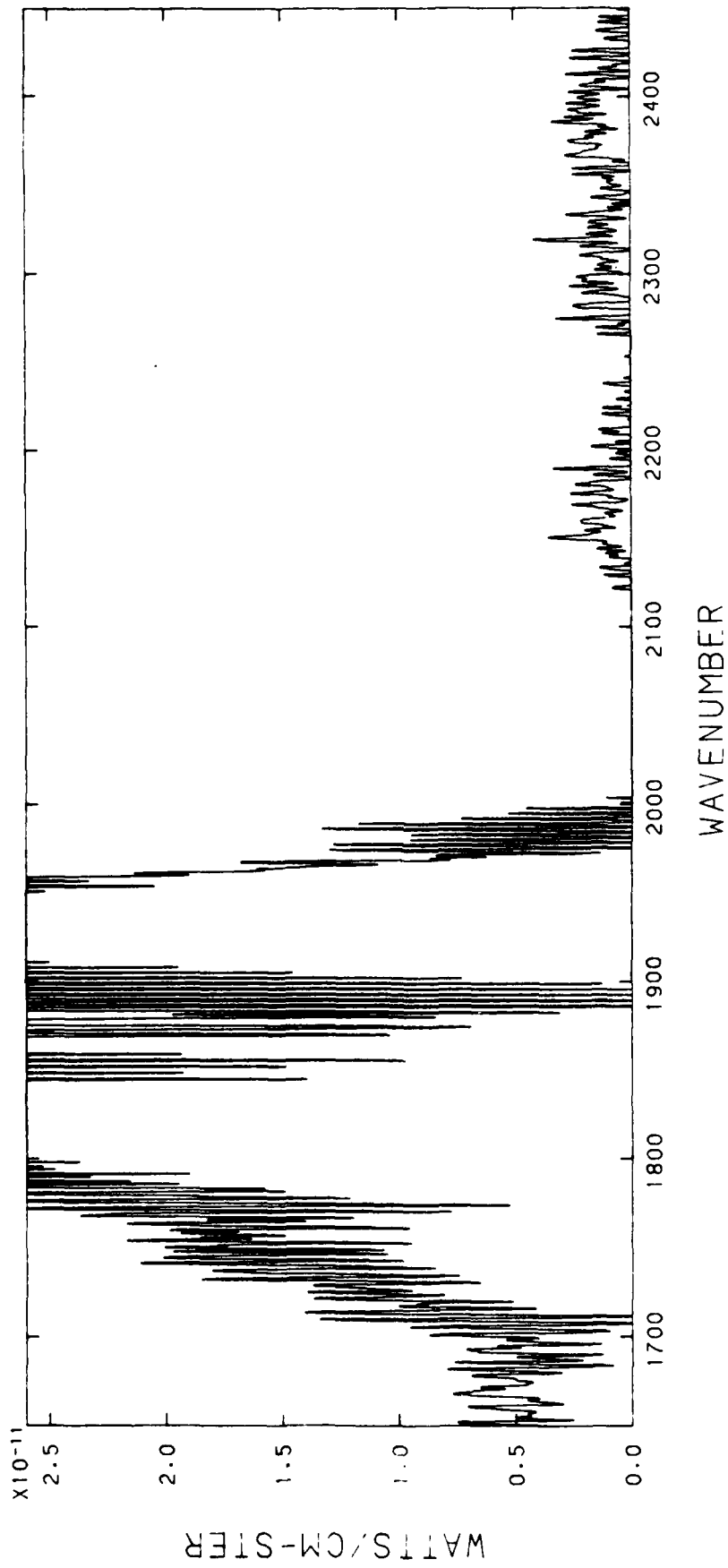


FILE 96, TIME 9:10:18.254, ALT 128.4-127.7 KM

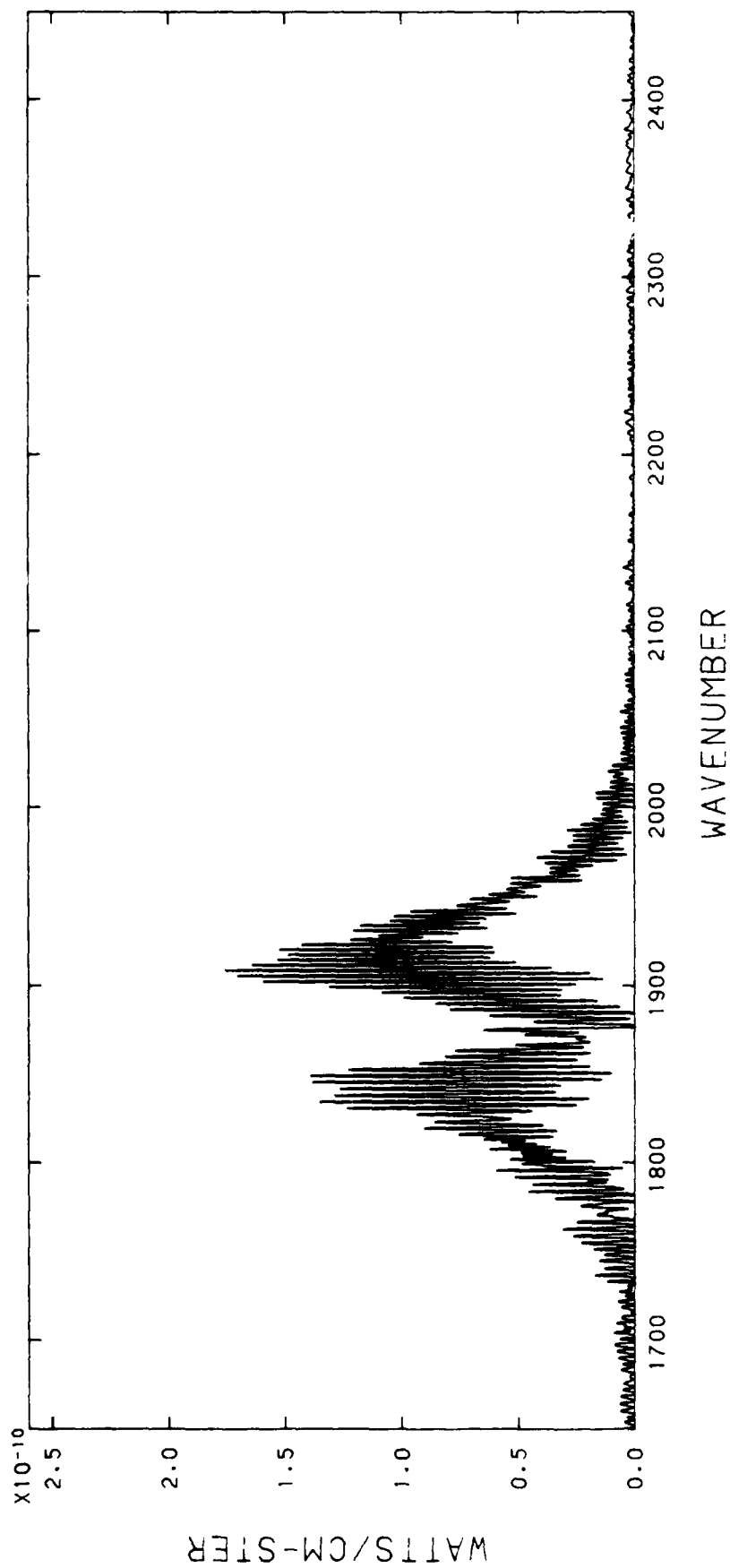


FILE 97, TIME 9:10:19.892, ALT 127.7-126.9 KM

24-NOV-83 00:36

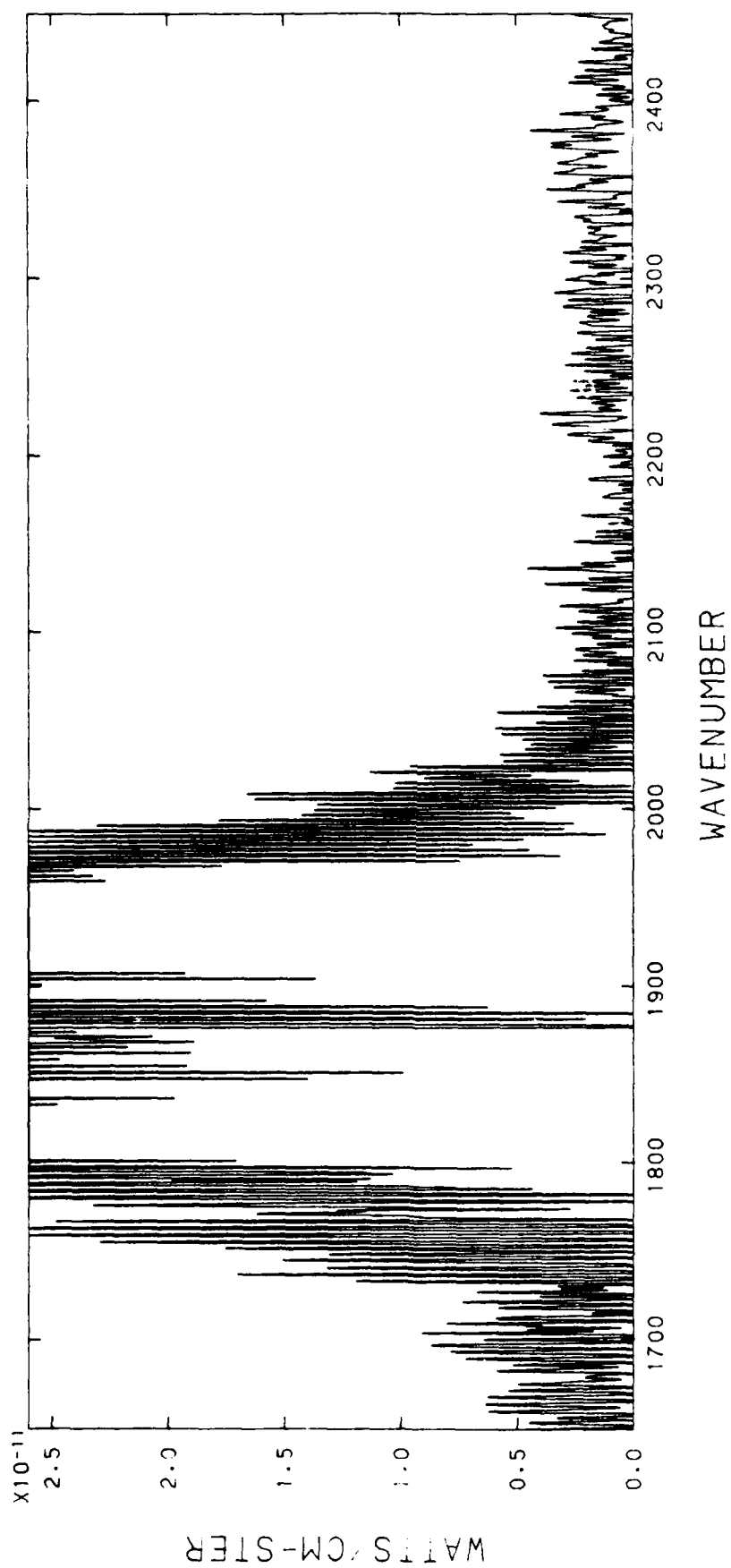


FILE 97, TIME 9:10:19.892, ALT 127.7-126.9 KM



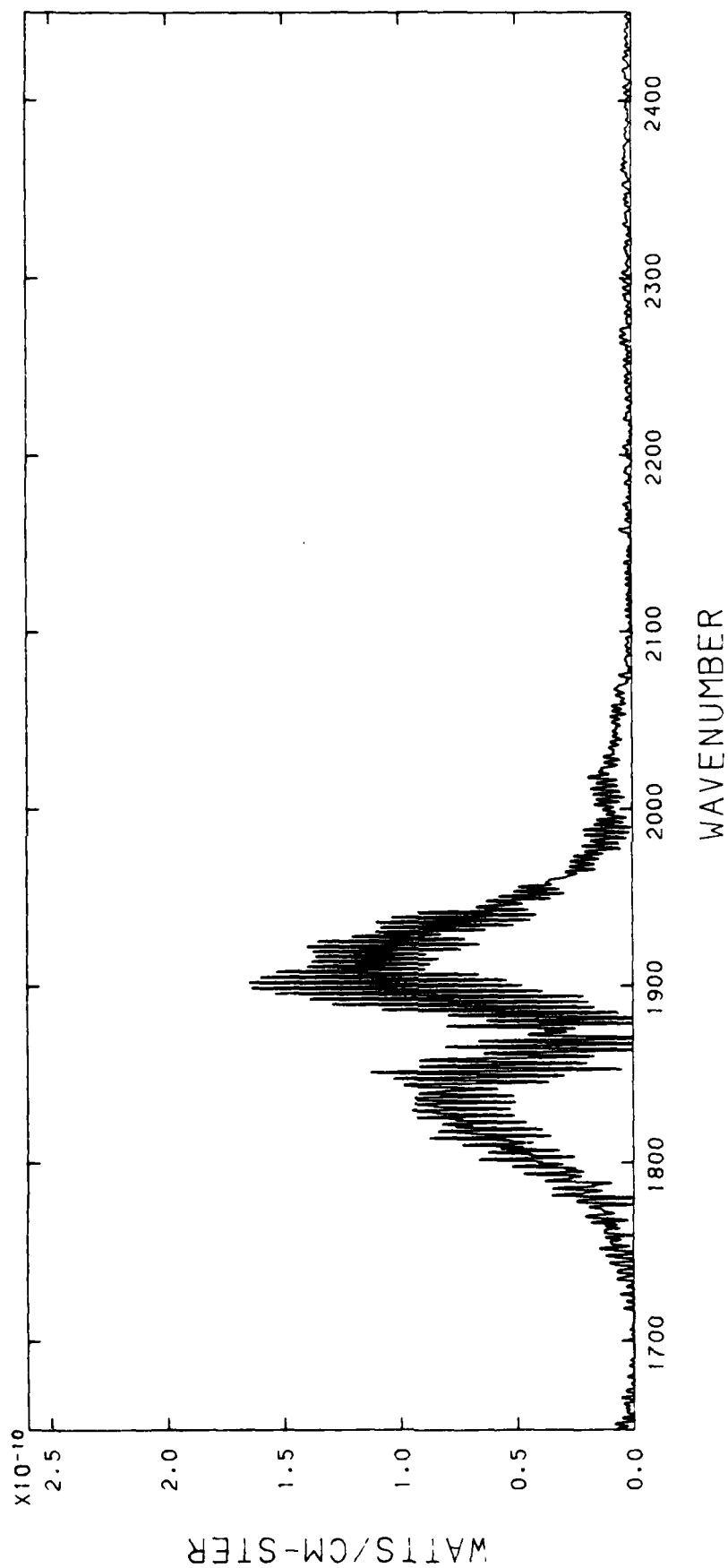
FILE 98, TIME 9:10:21.530, ALT 126.9-126.1 KM

24-NOV-83 00:35



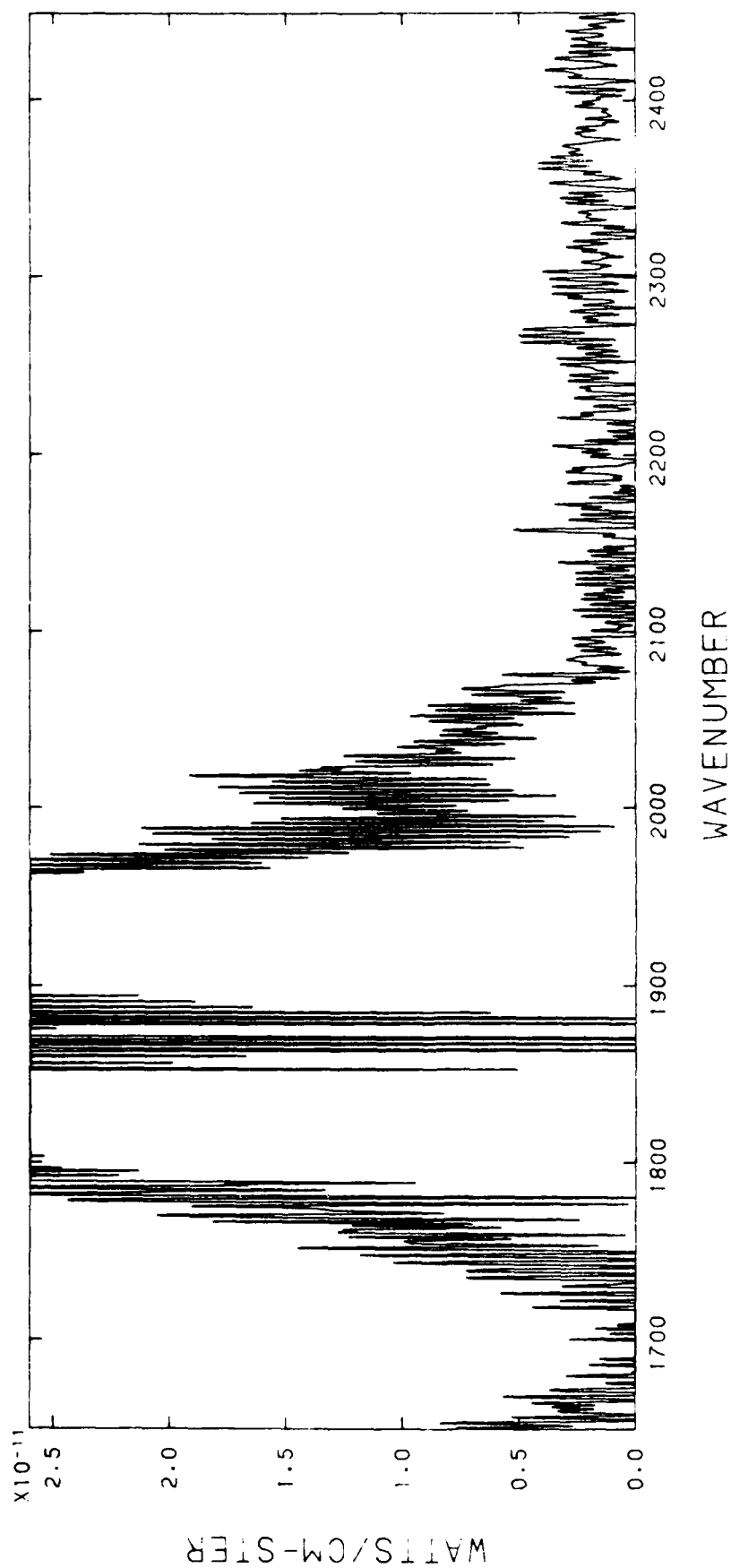
FILE 98, TIME 9:10:21.530, ALT 126.9-126.1 KM

24-NOV-83 00:36



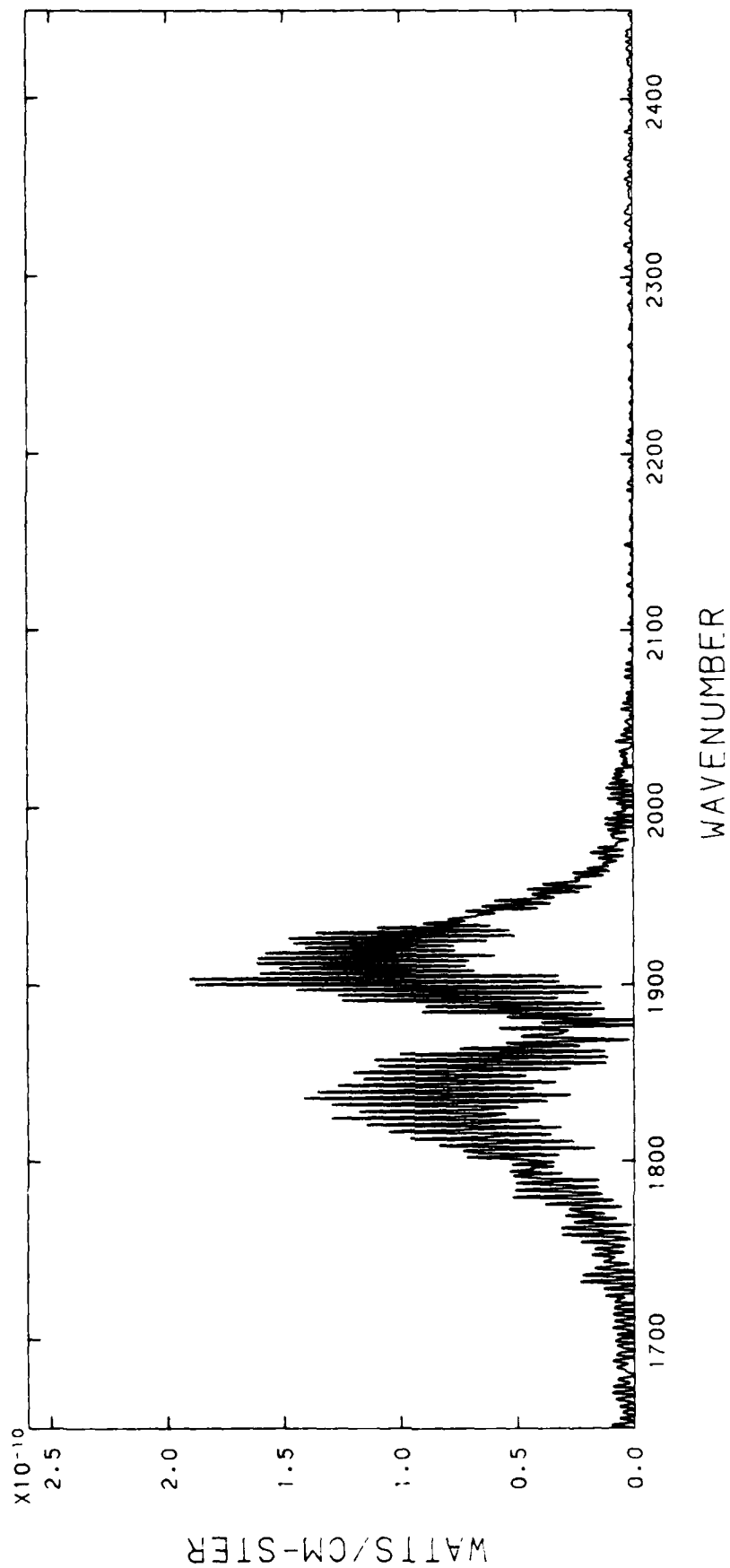
FILE 99, TIME 9:10:23.160, ALT 126.1-125.3 KM

24-NOV-83 00:37



FILE 99, TIME 9:10:23.160, ALT 126.1-125.3 KM

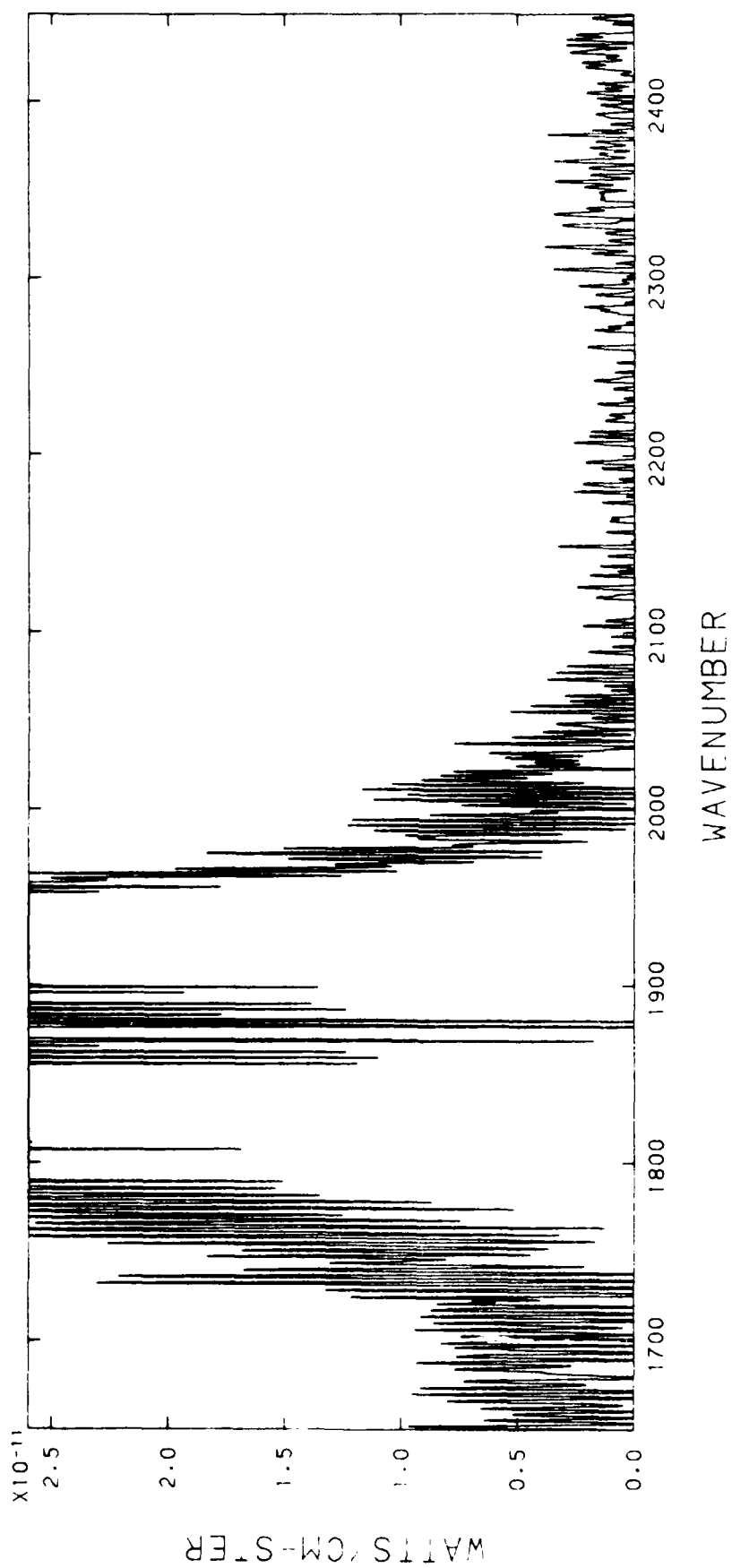
24-NOV-83 00:37



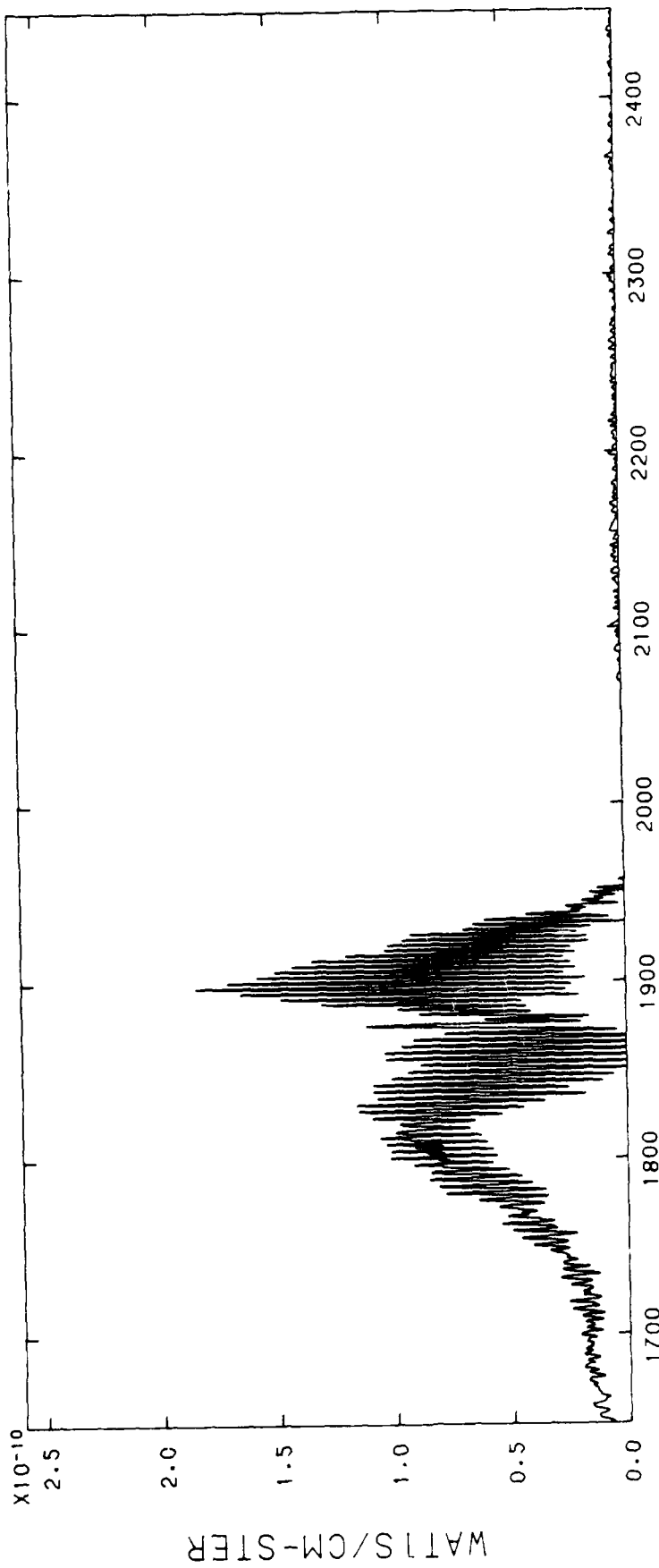
FILE 100, TIME 9:10:24.790, ALT 125.3-124.4 KM

24-NOV-83 00:37



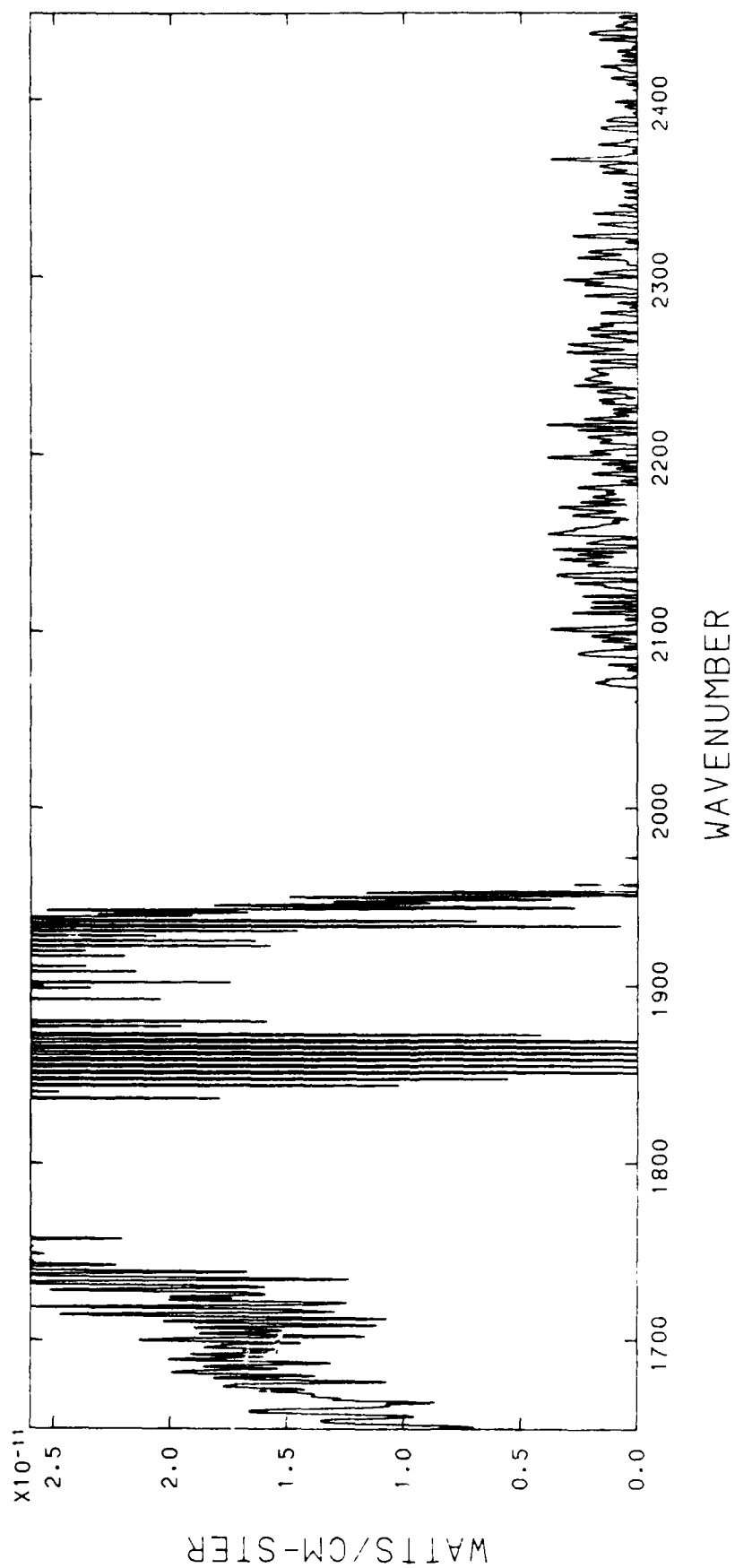


FILE 100, TIME 9:10:24.790, ALT 125.3-124.4 KM



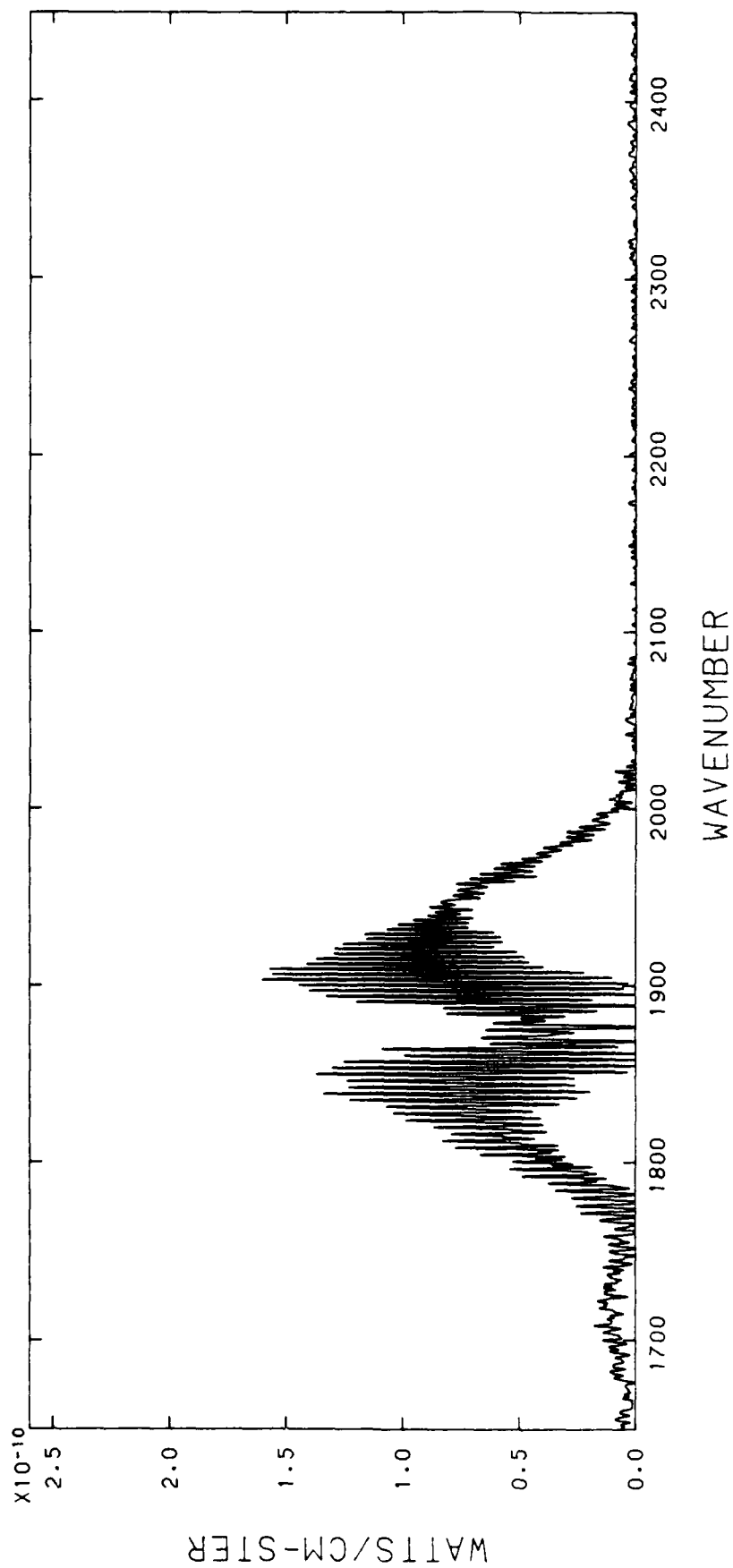
FILE 101, TIME 9:10:26.420, ALT 124.4-123.6 KM

24-NOV-83 00:38



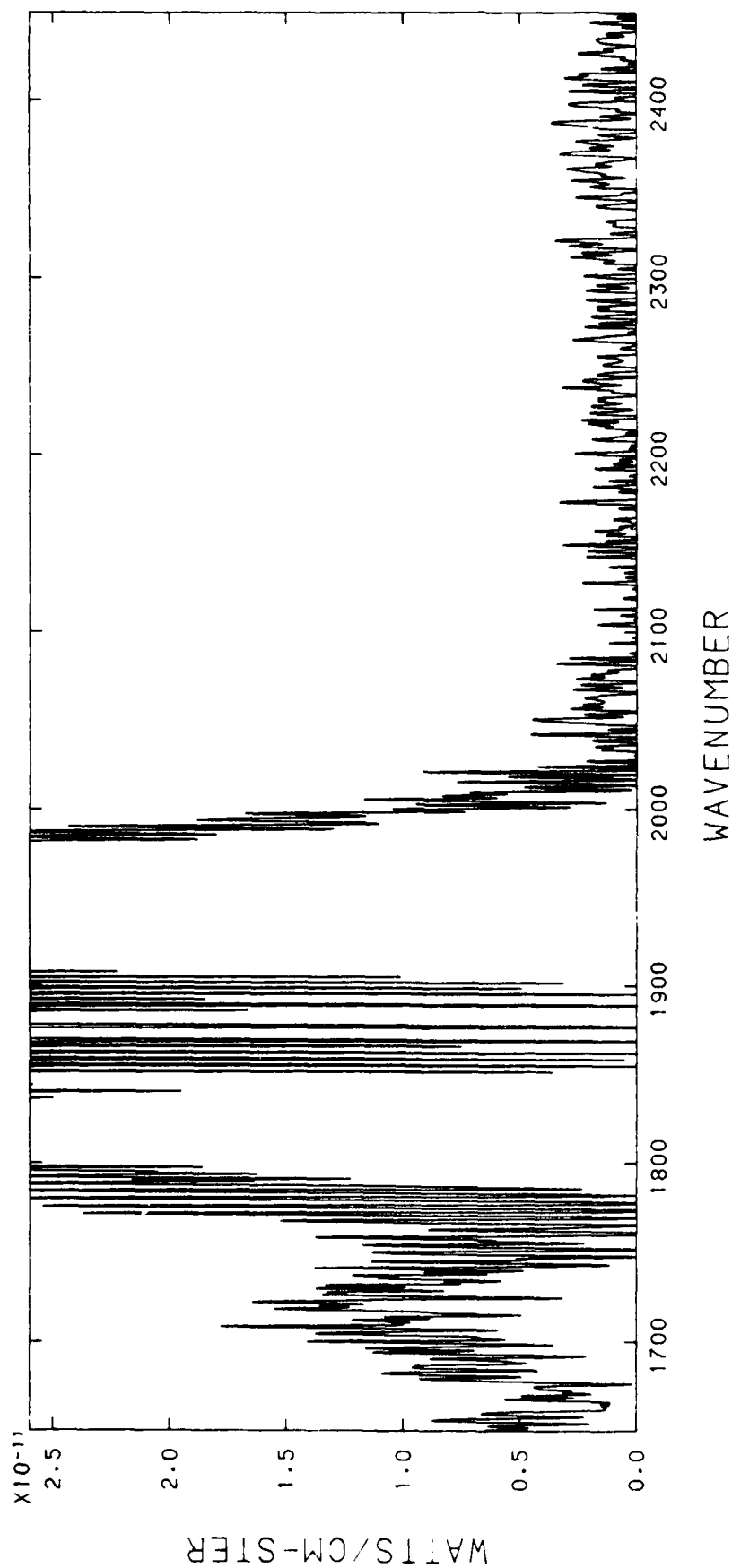
FILE 101, TIME 9:10:26.420, ALT 124.4-123.6 KM

24-NOV-83 00:38



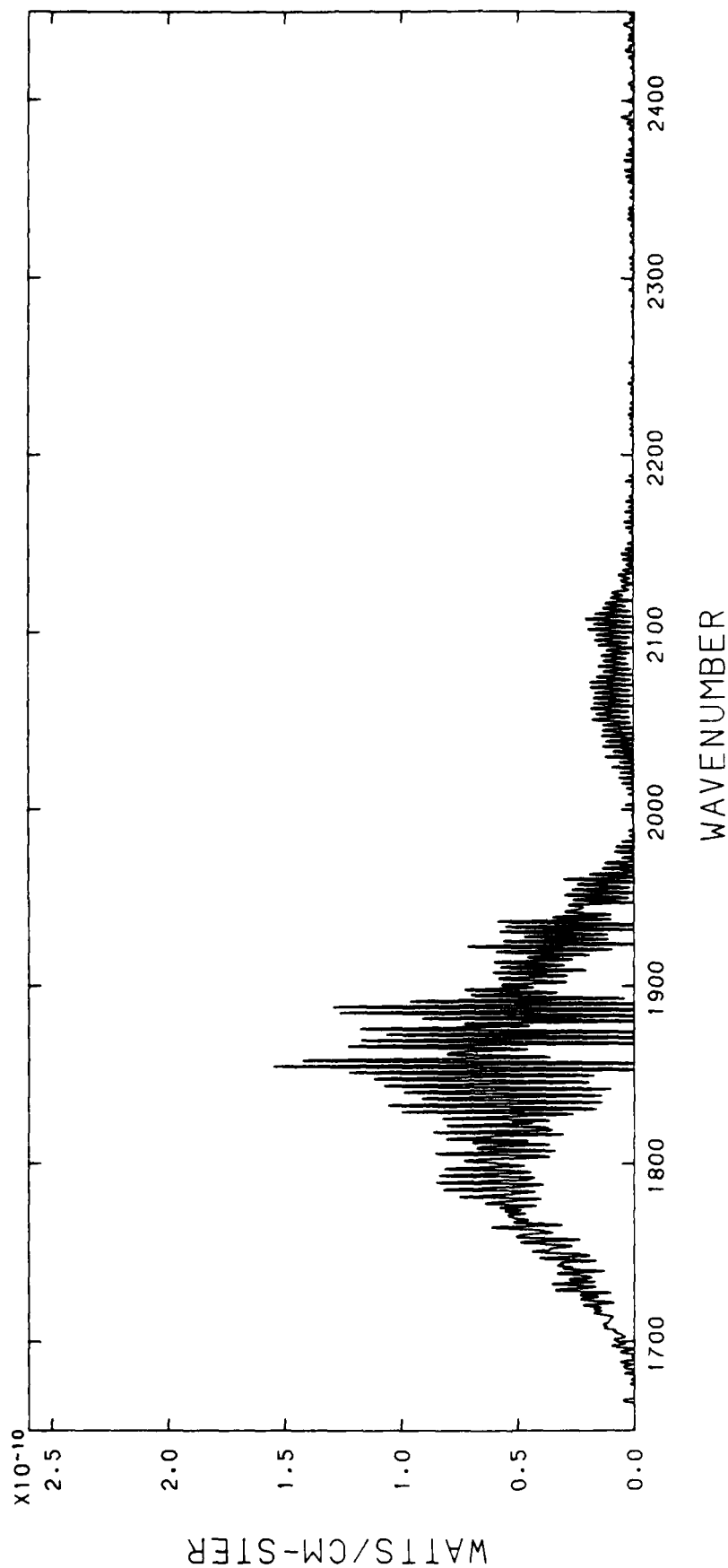
FILE 102, TIME 9:10:28. 50, ALT 123.5-122.6 KM

24-NOV-83 00:38



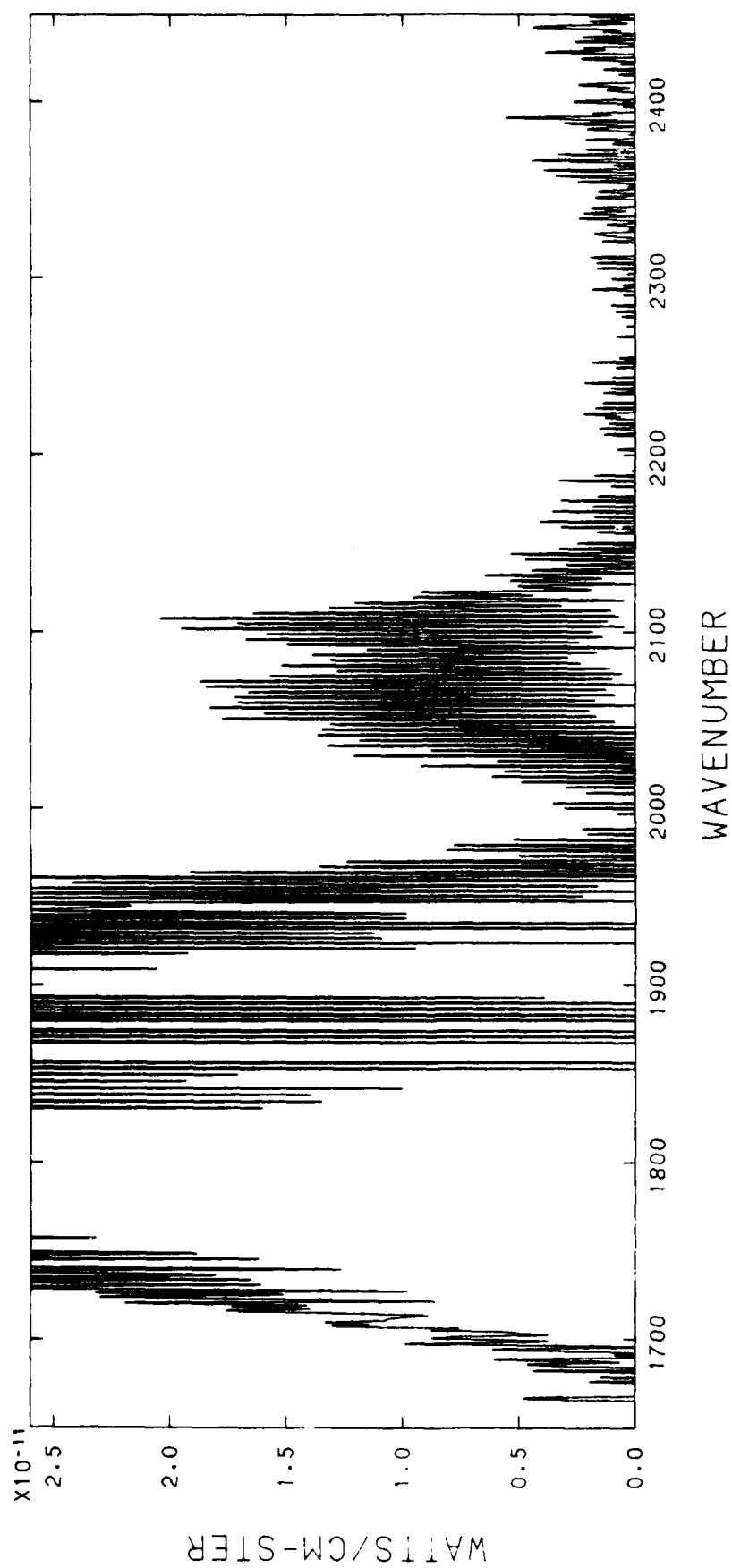
FILE 102, TIME 9:10:28. 50, ALT 123.5-122.6 KM

24-NOV-83 00:38



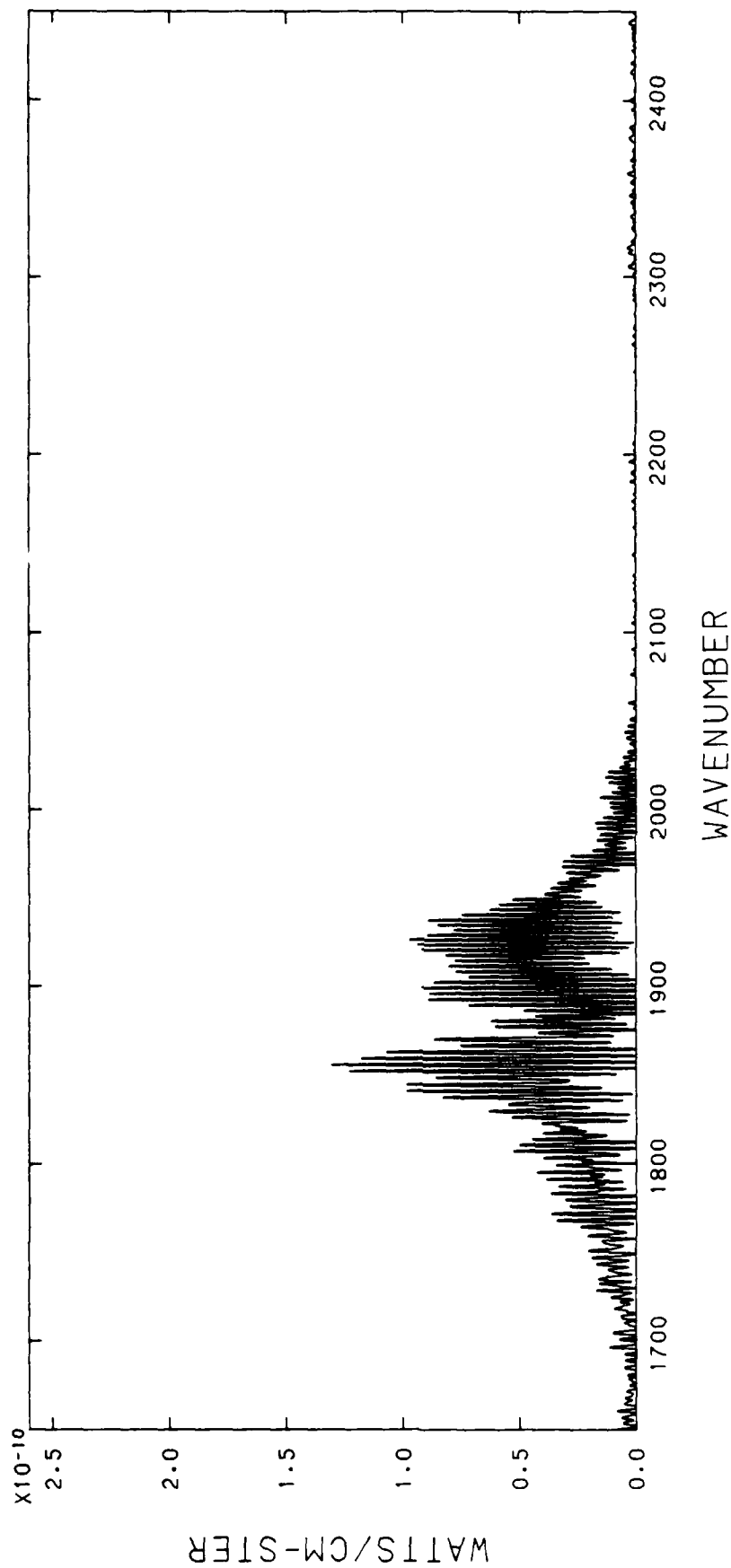
FILE 103, TIME 9:10:29.680, ALT 122.6-121.7 KM

24-NOV-83 00:38



FILE 103, TIME 9:10:29.680, ALT 122.6-121.7 KM

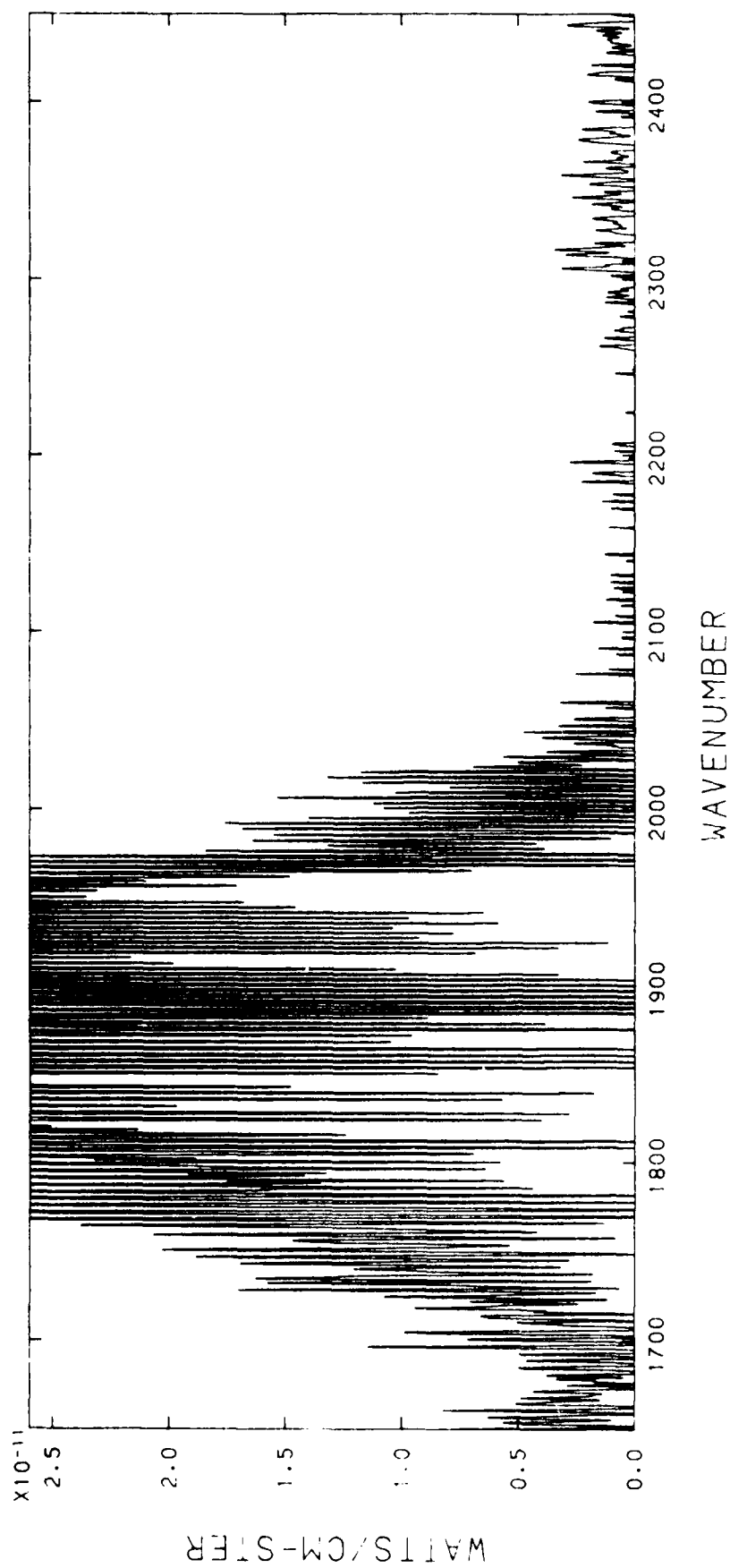
24-NOV-83 00:39



FILE 104, TIME 9:10:31.316, ALT 121.7-120.8 KM

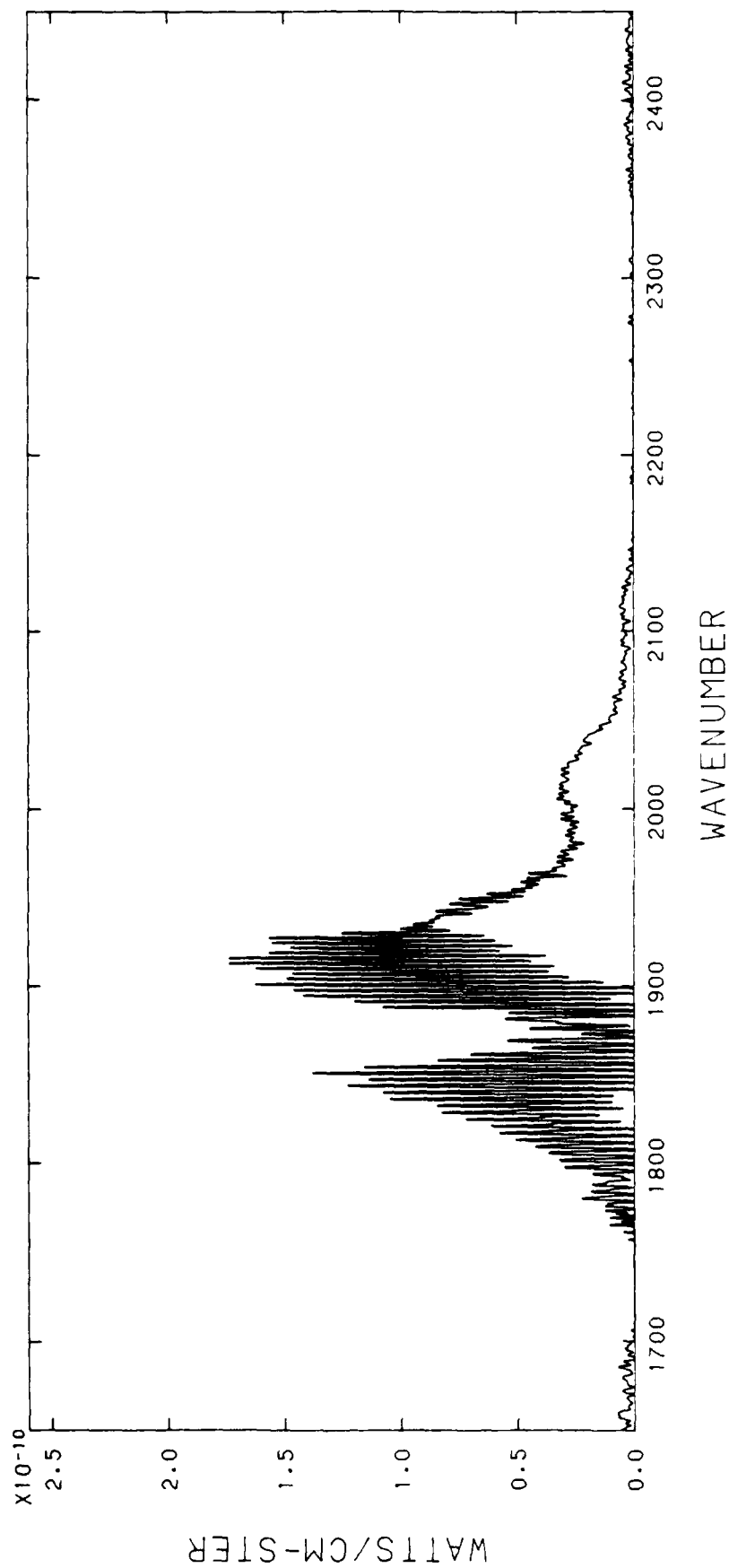
24-NOV-83 00:39





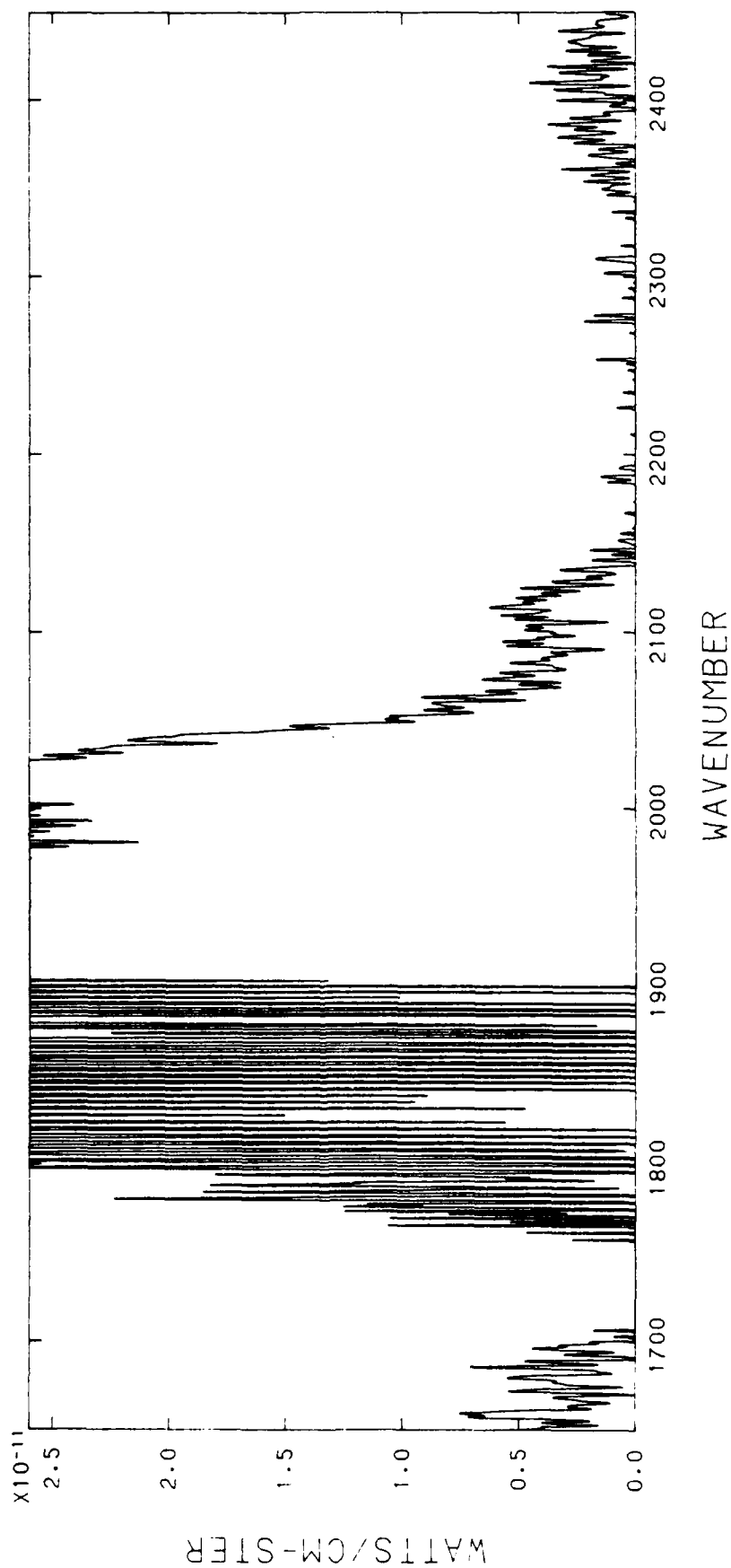
FILE 104, TIME 9:10:31.316, ALT 121.7-120.8 KM

28-NOV-83 14:55



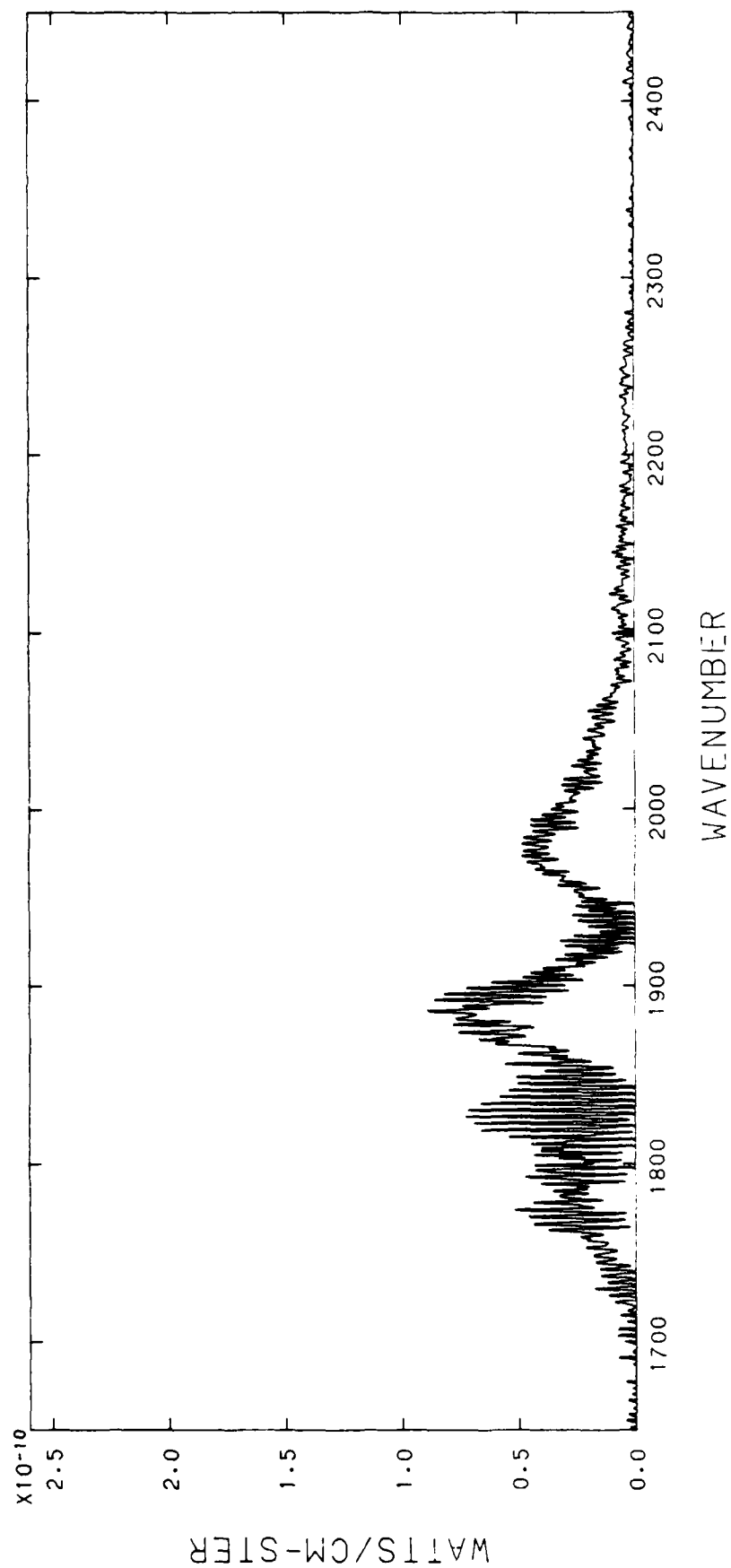
FILE 105, TIME 9:10:32.950, ALT 120.8-119.8 KM

24--OV-83 00:39



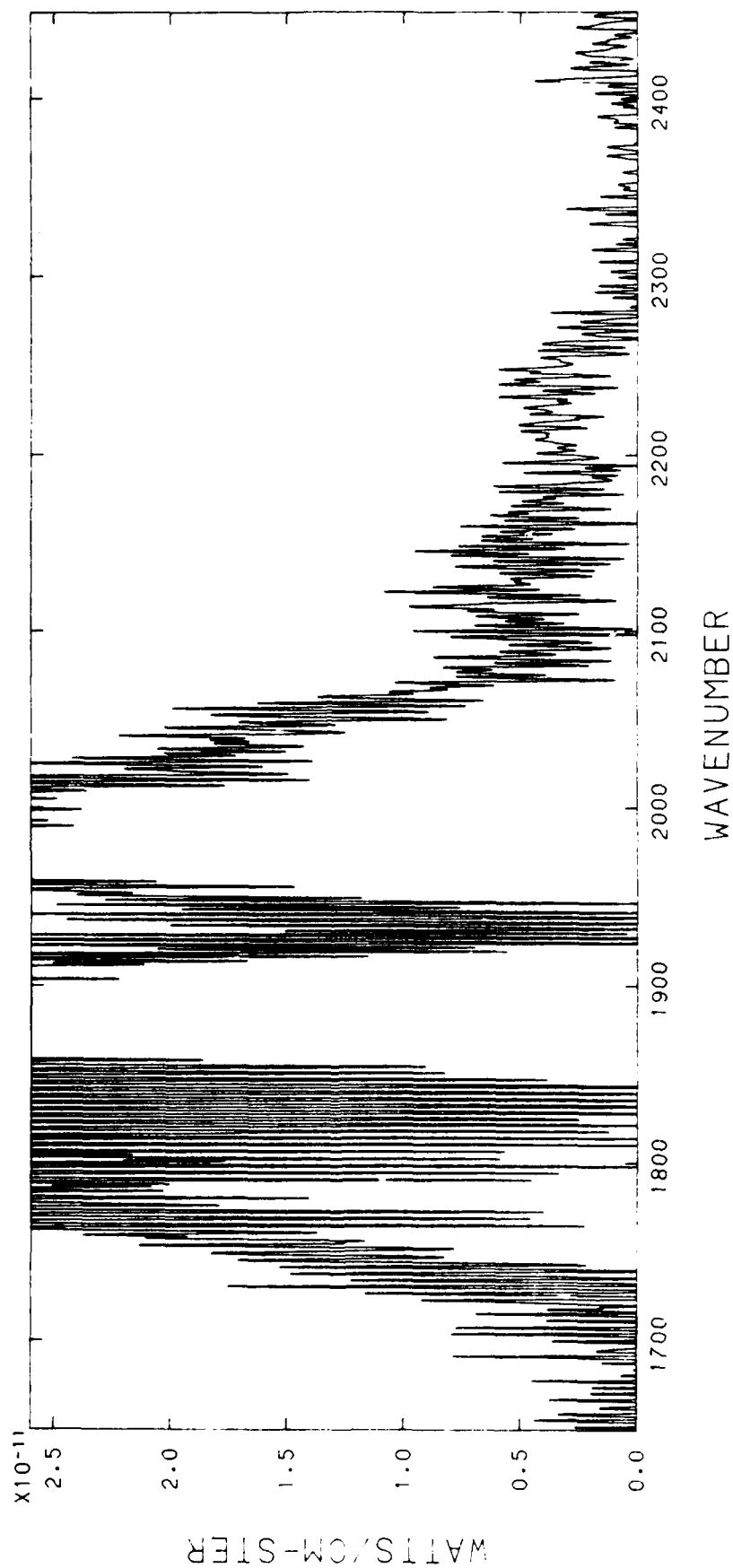
FILE 105. TIME 9:10:32.950, ALT 120.8-119.8 KM

24-NOV-83 00:39



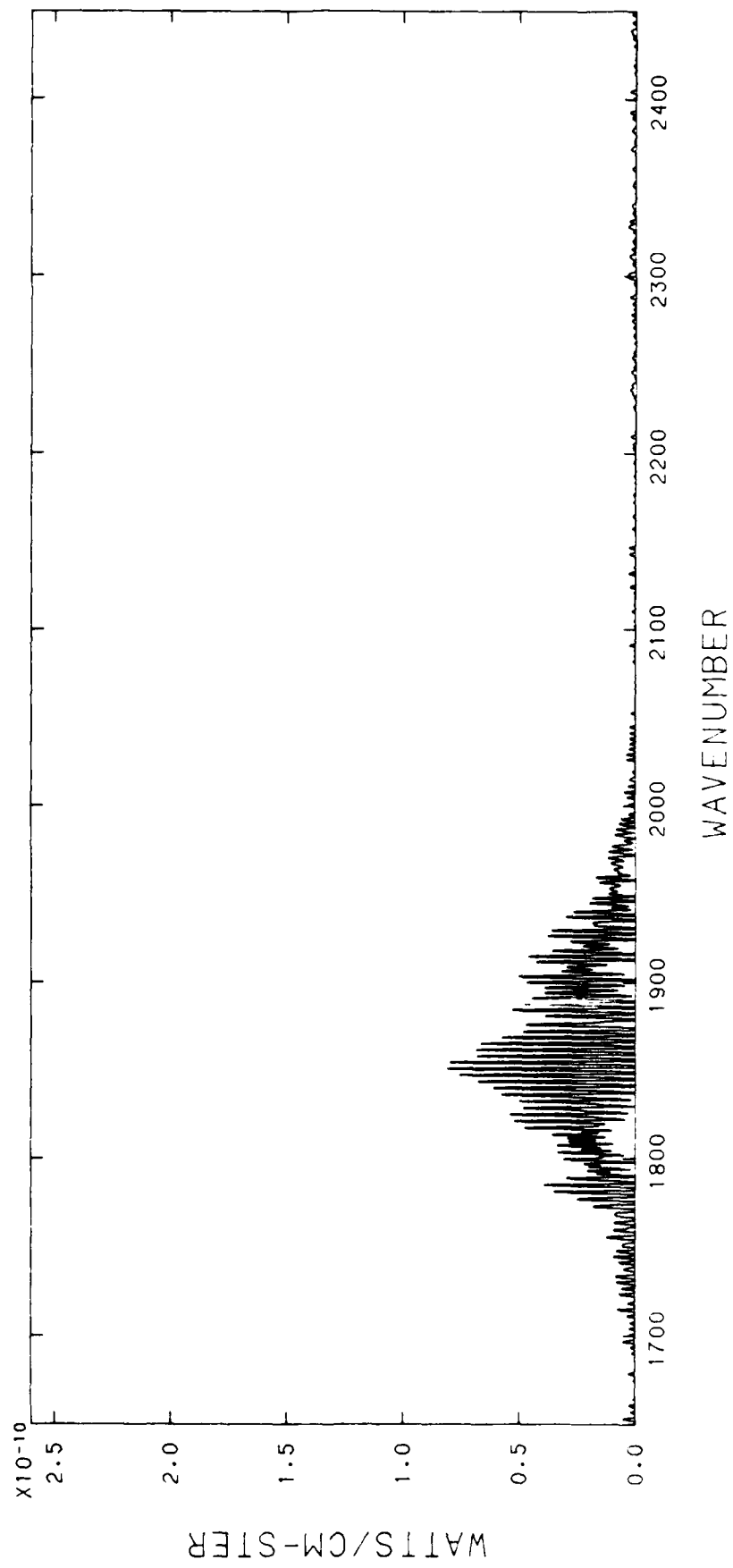
FILE 106, TIME 9:10:34.578, ALT 119.8-118.8 KM

24-NOV-73 00:39

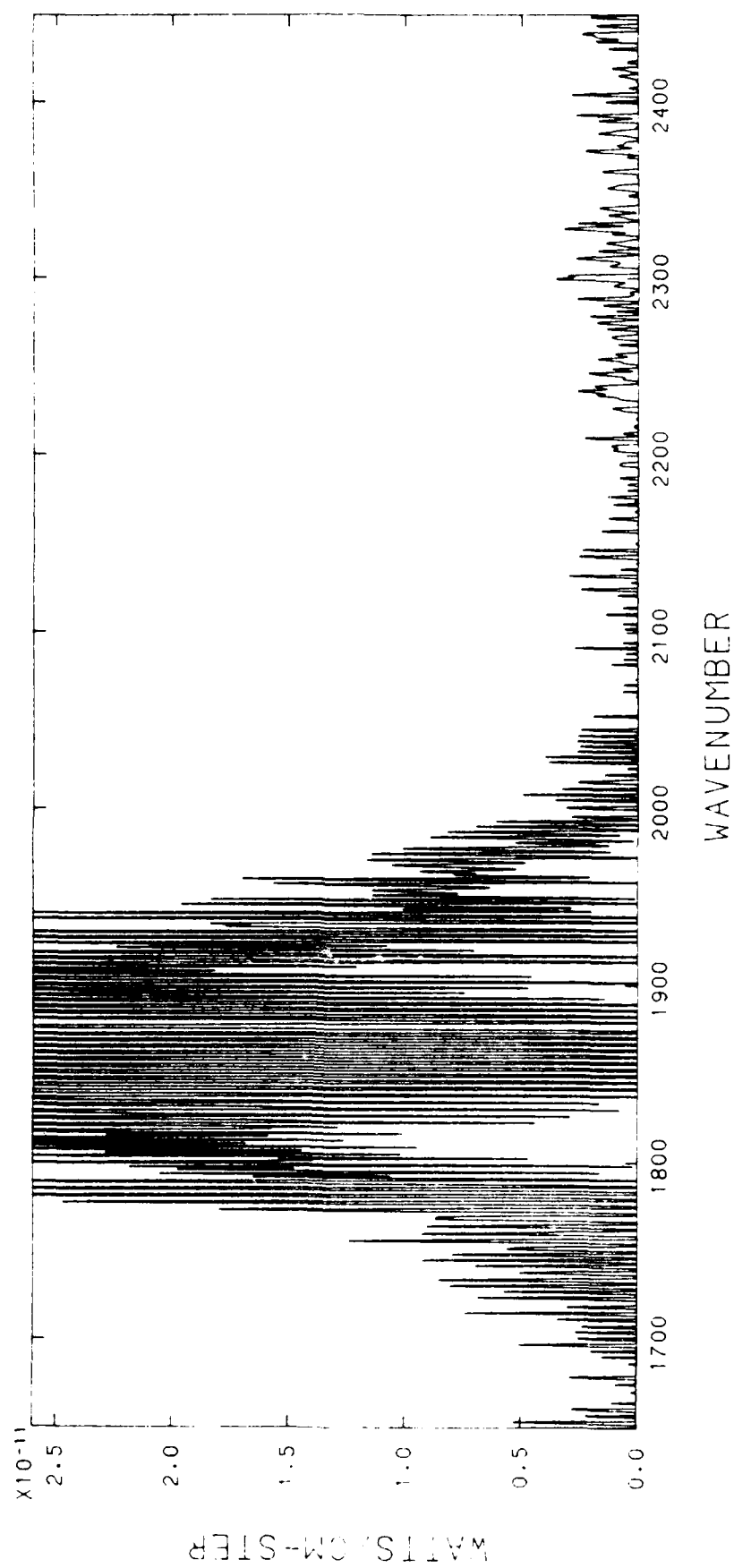


FILE 106, TIME 9:10:34.578, ALT 119.8-118.8 KM

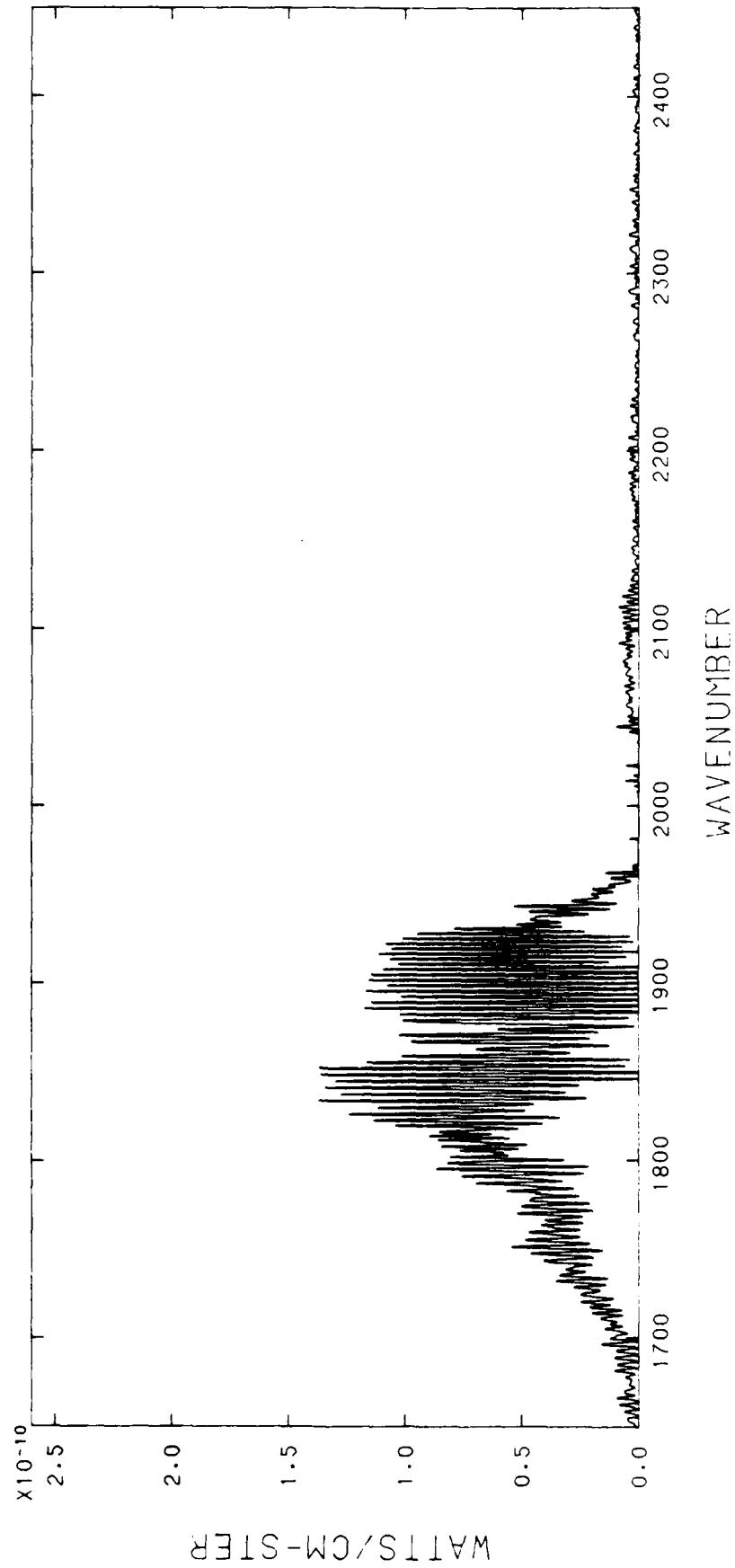
24-NOV-83 00:39



FILE 107, TIME 9:10:36.204, ALT 118.8-117.8 KM

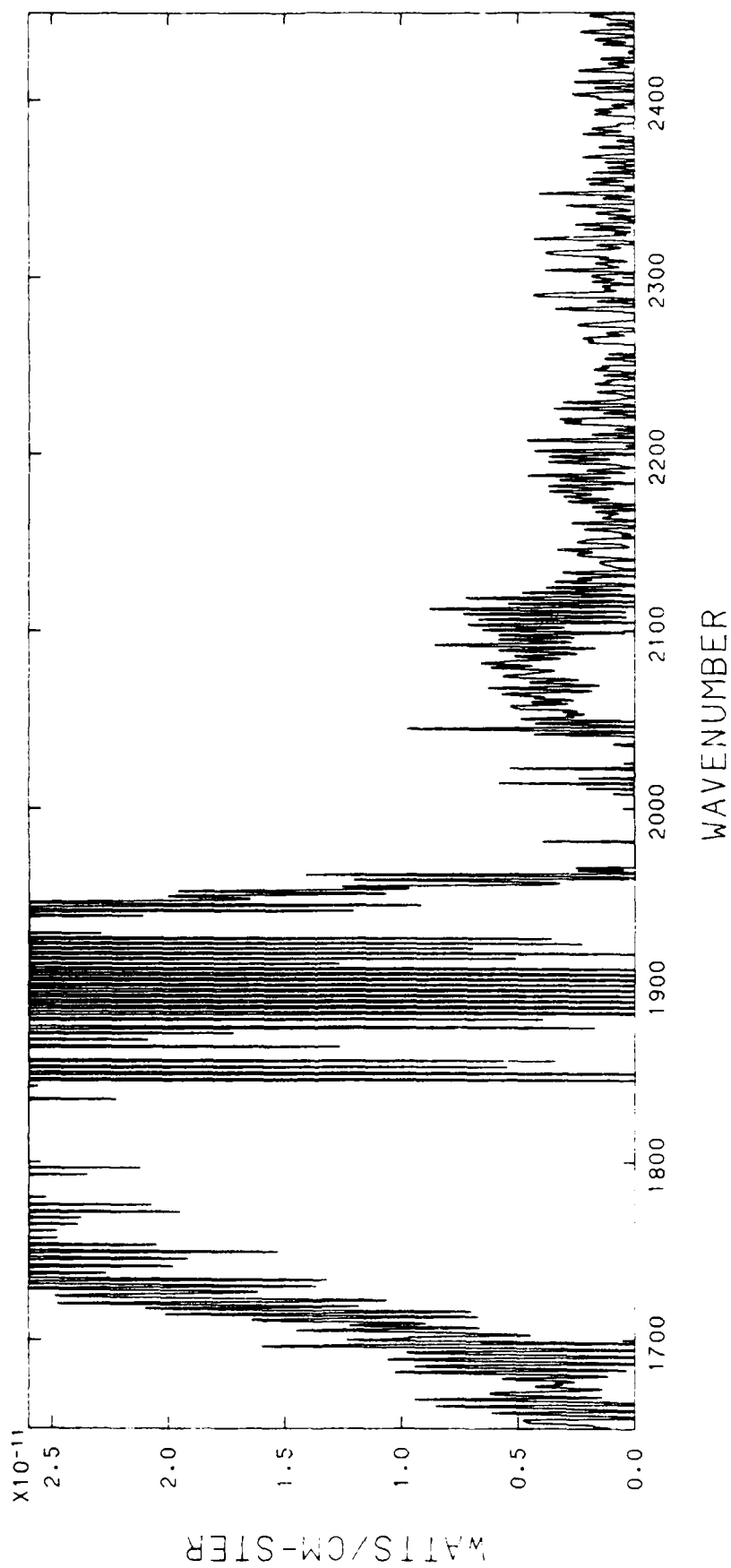


FILE 107, TIME 9:10:36.204, ALT 118.8-117.8 KM

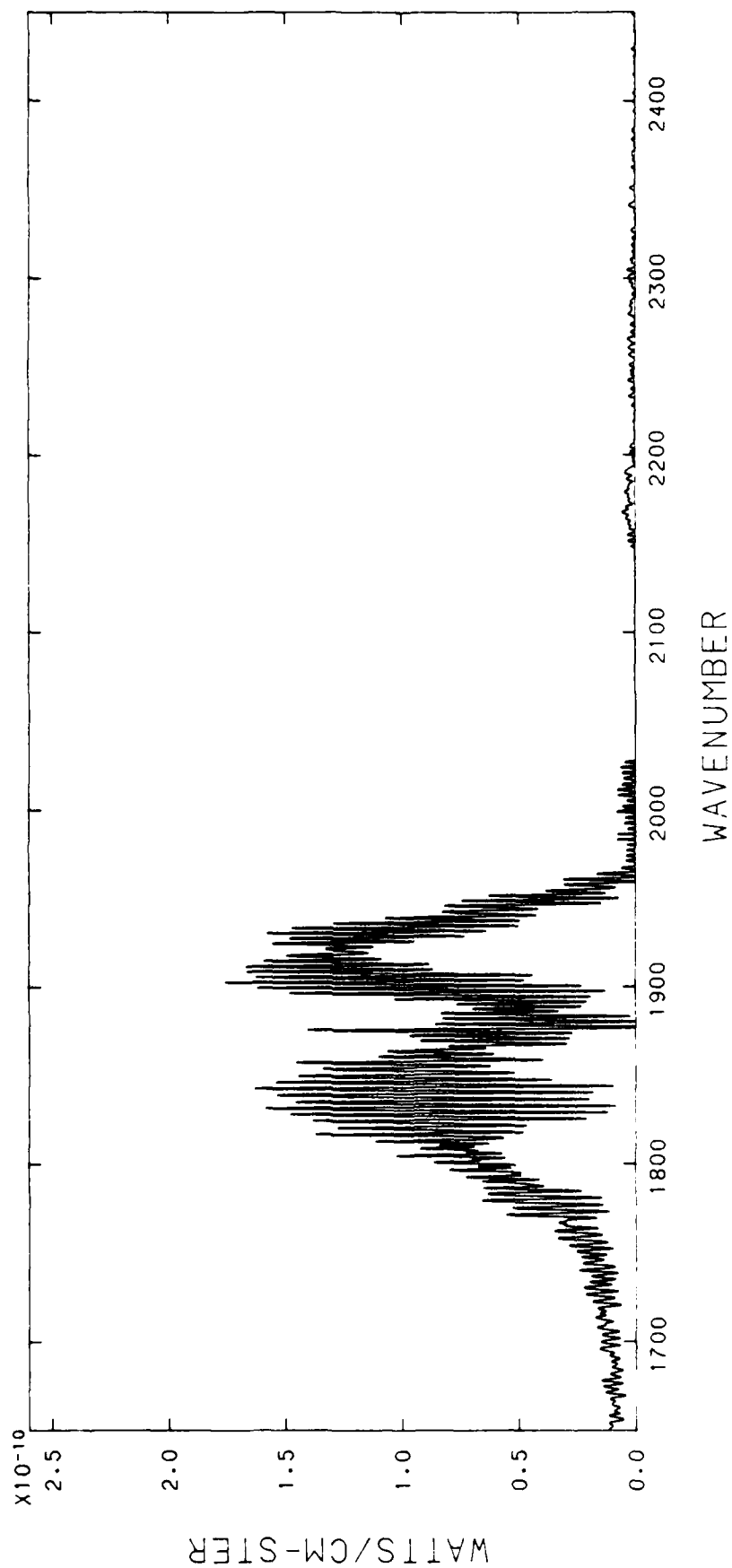


FILE 108, TIME 9:10:37.832, ALT 117.8-116.7 KM



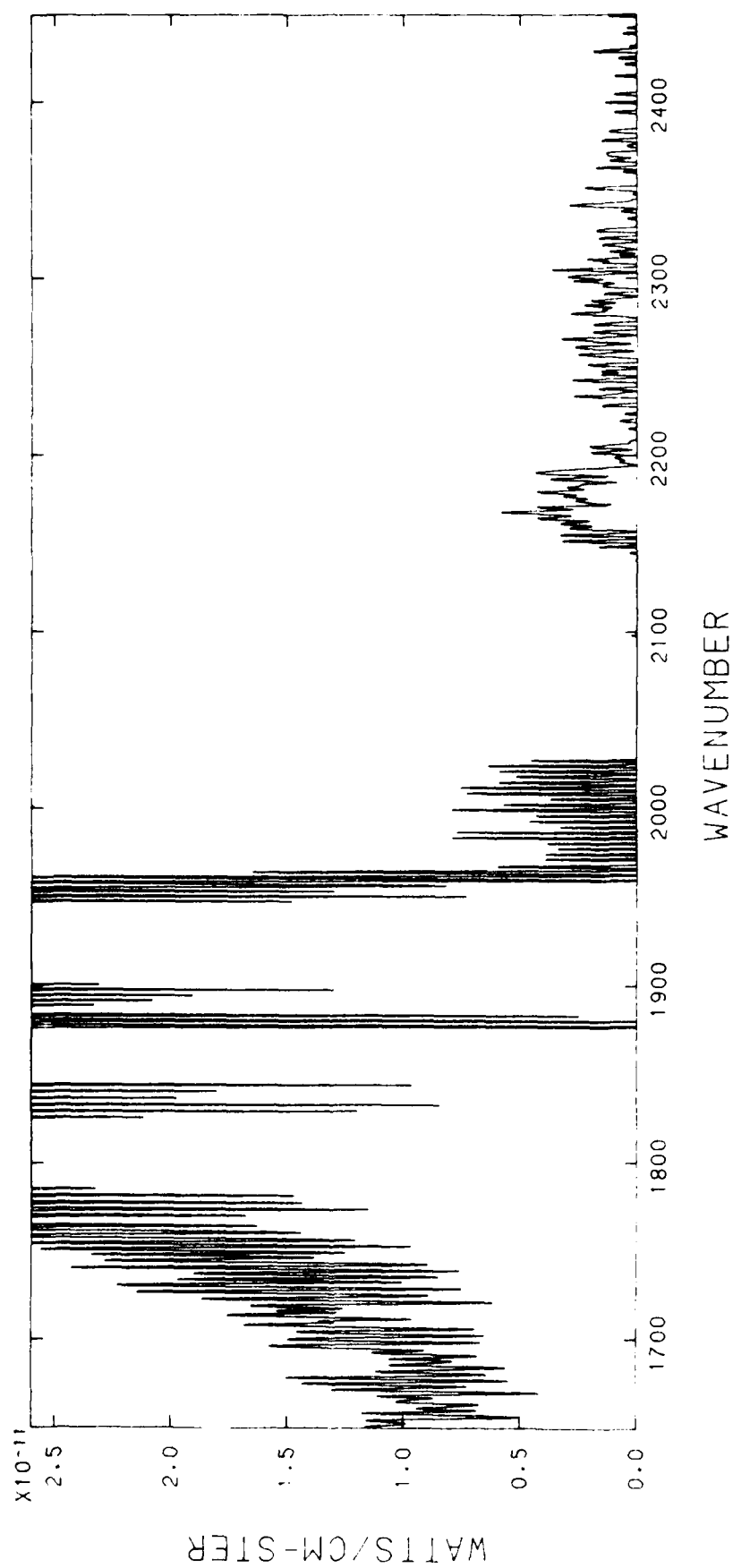


FILE 108, TIME 9:10:37.832, ALT 117.8-116.7 KM



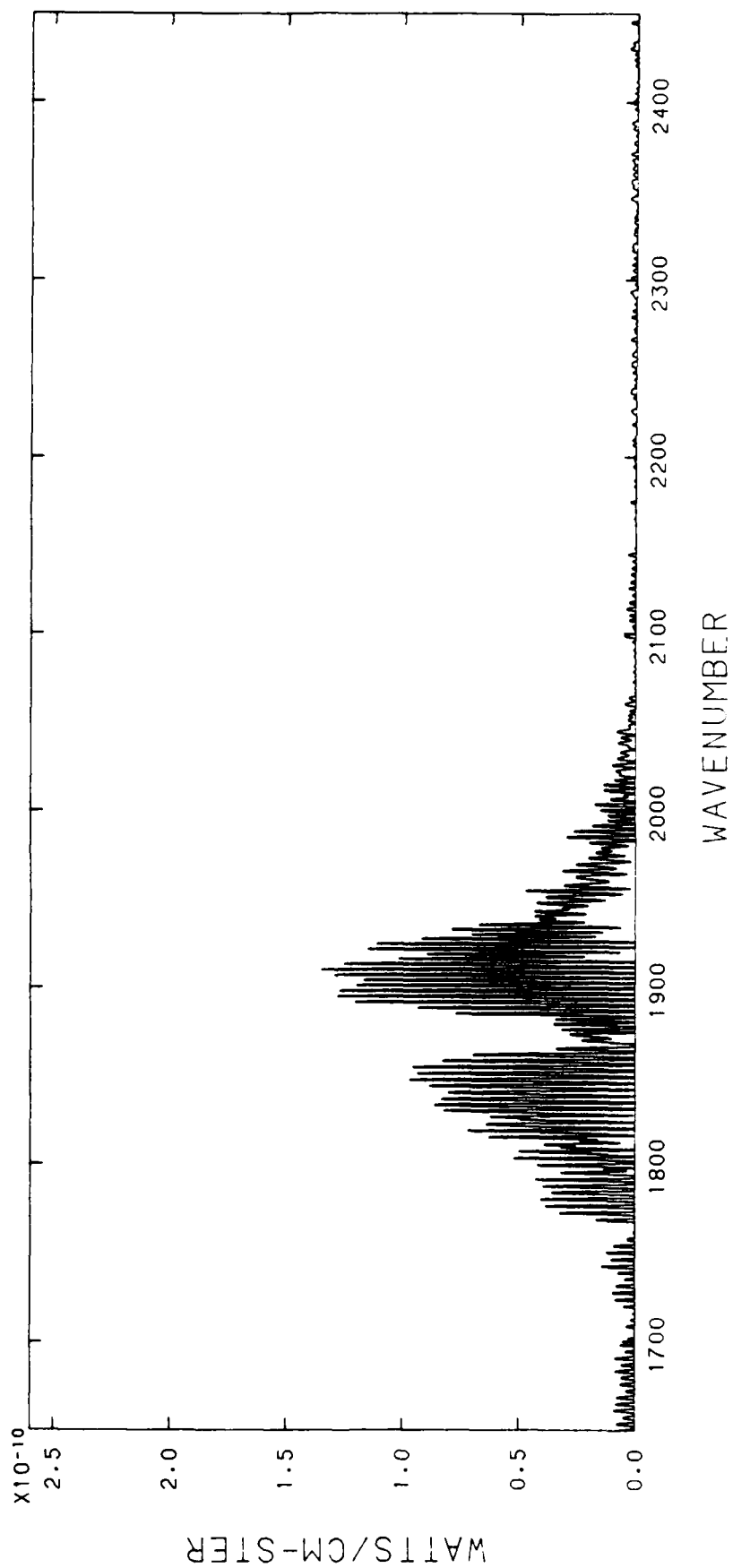
FILE 109, TIME 9:10:39.464, ALT 116.7-115.7 KM

24-NOV-83 00:40



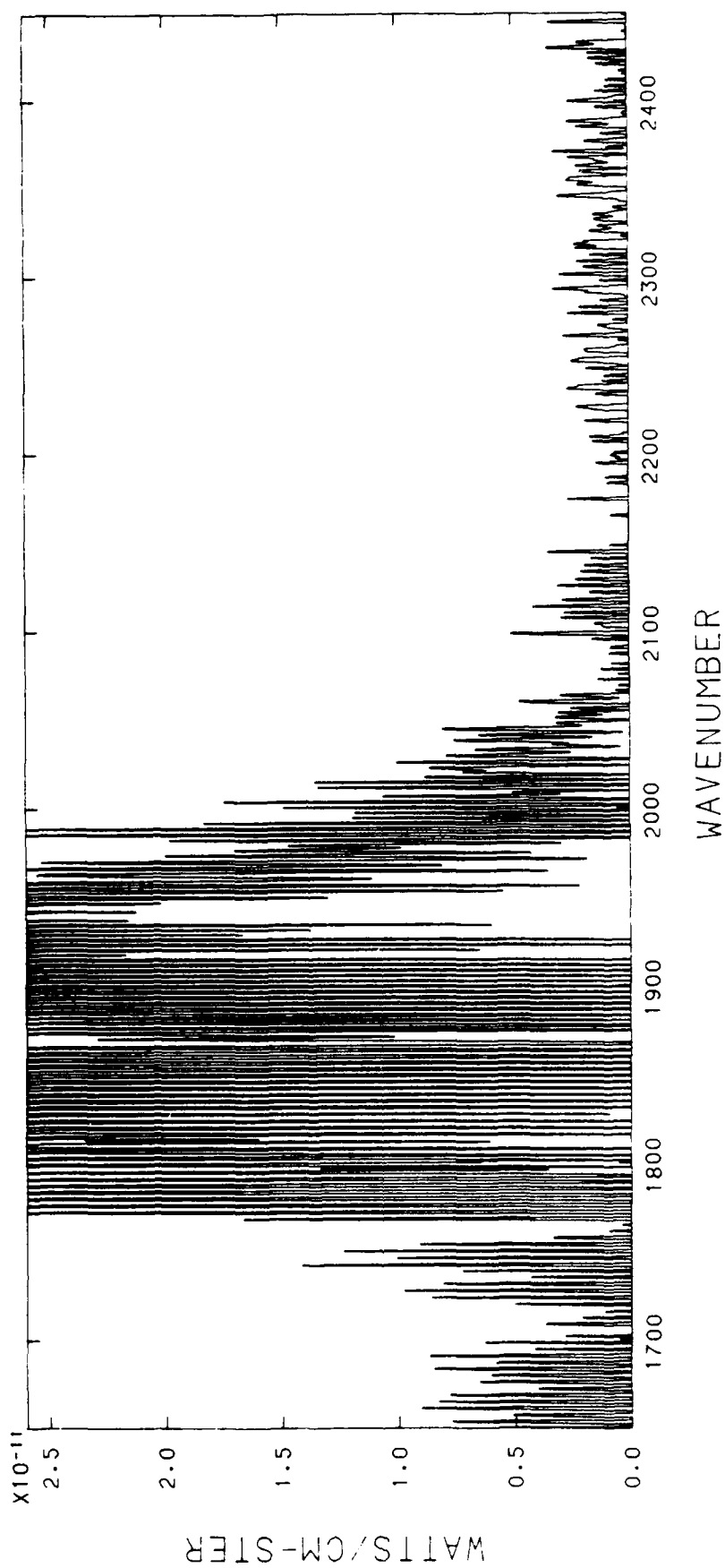
FILE 109, TIME 9:10:39.464, ALT 116.7-115.7 KM

24-NOV-83 00:40

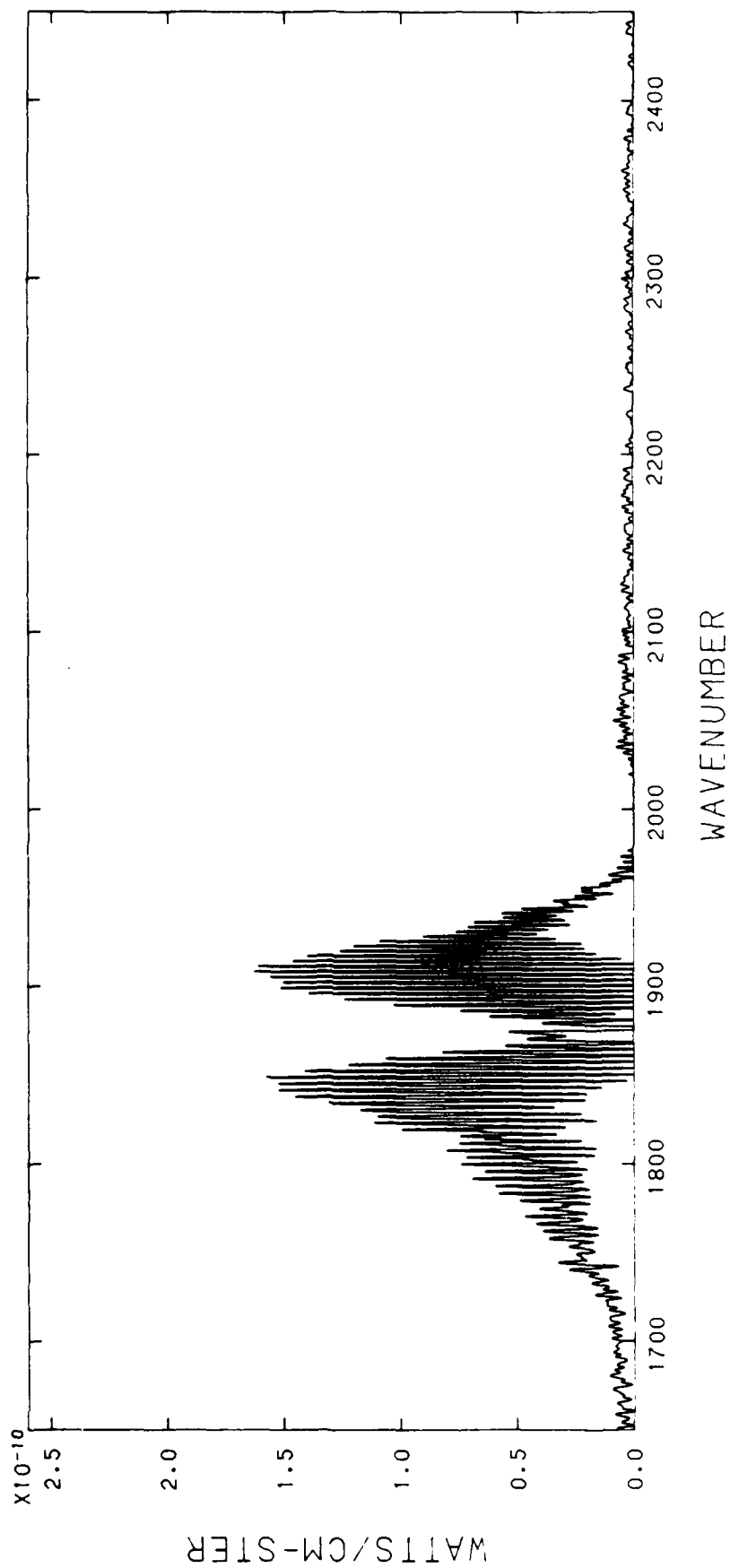


FILE 110, TIME 9:10:41. 98, ALT 115.6-114.5 KM

24-NOV-83 00:40

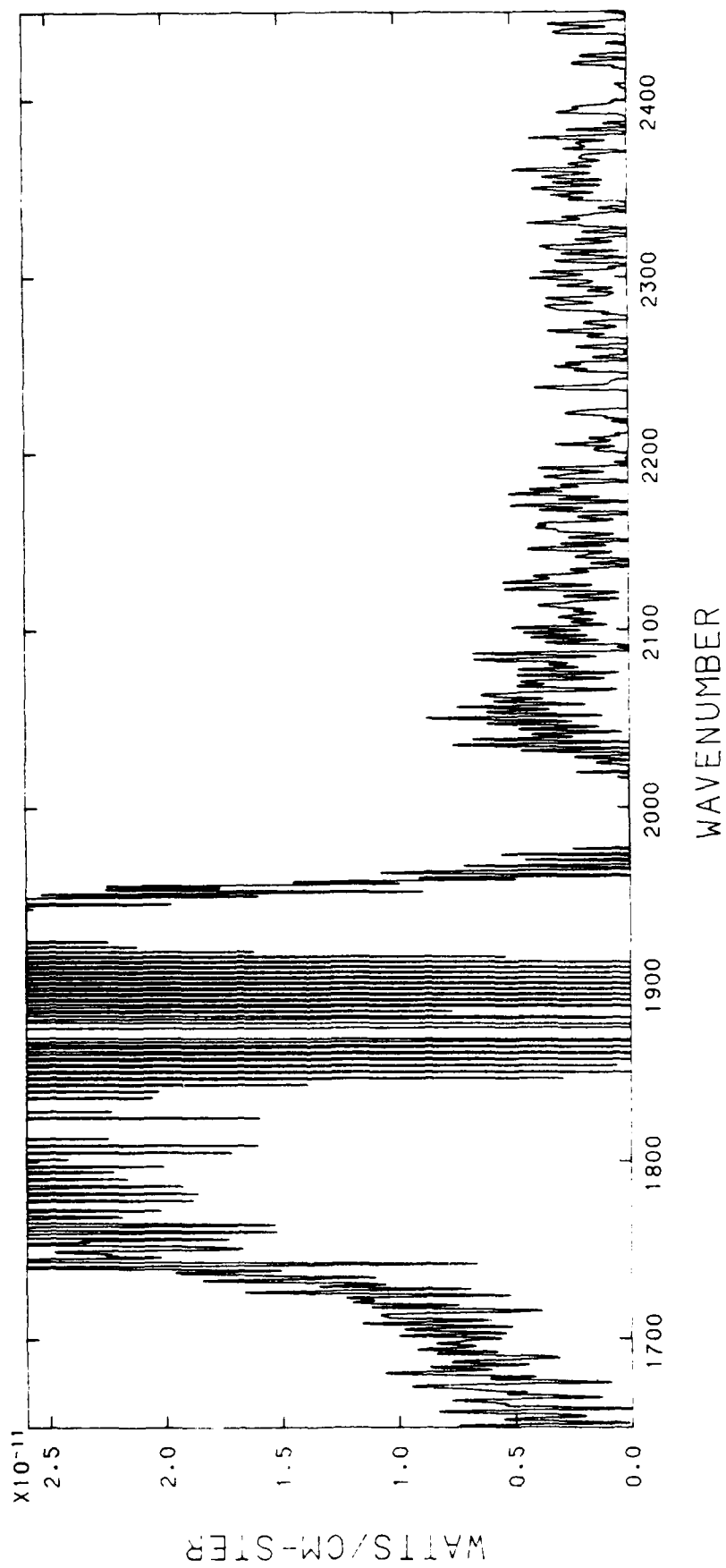


FILE 110, TIME 9:10:41. 98, ALT 115.6-114.5 KM

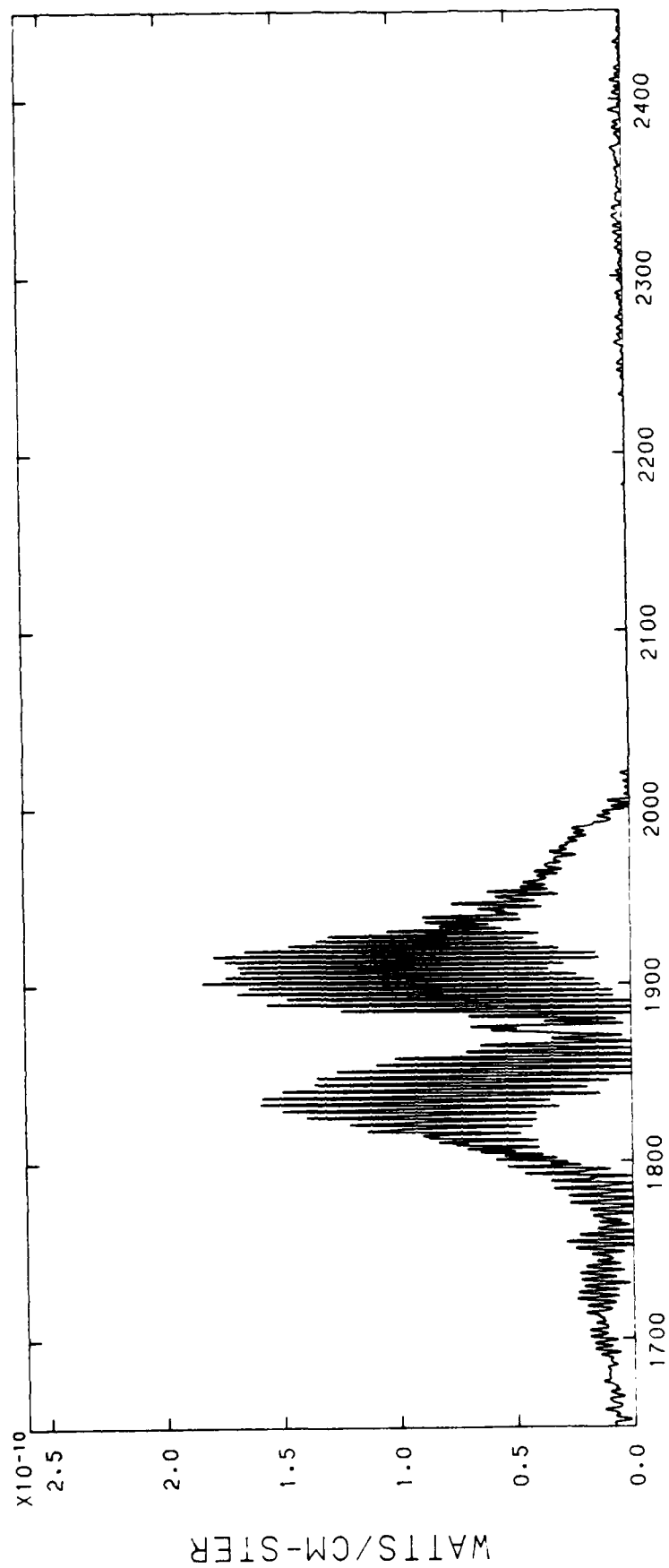


FILE 111, TIME 9:10:42.750, ALT 114.5-113.4 KM

24-NOV-83 00:40



FILE 111, TIME 9:10:42.750, ALT 114.5-113.4 KM



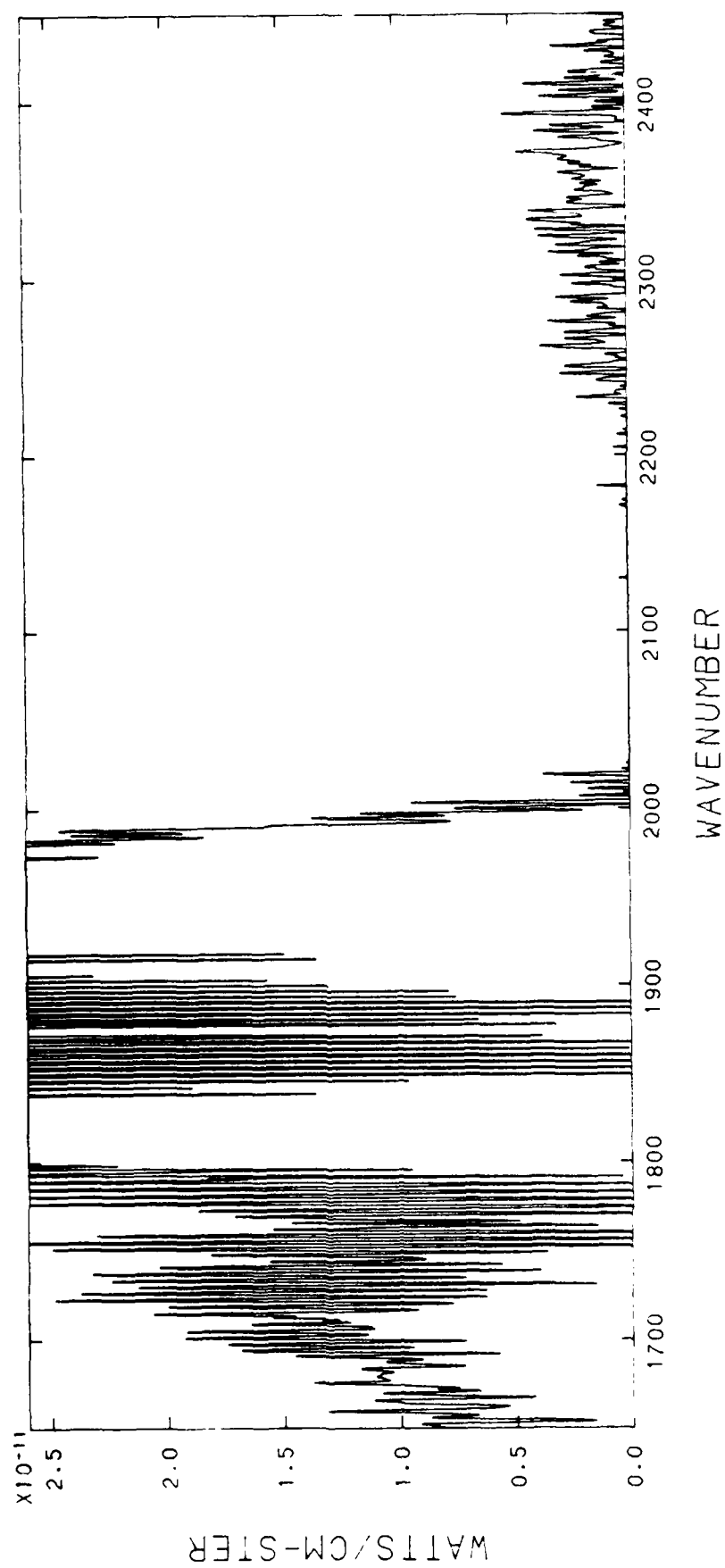
WAVENUMBER

FILE 112, TIME 9:10:44.400, ALT 113.4-112.2 KM

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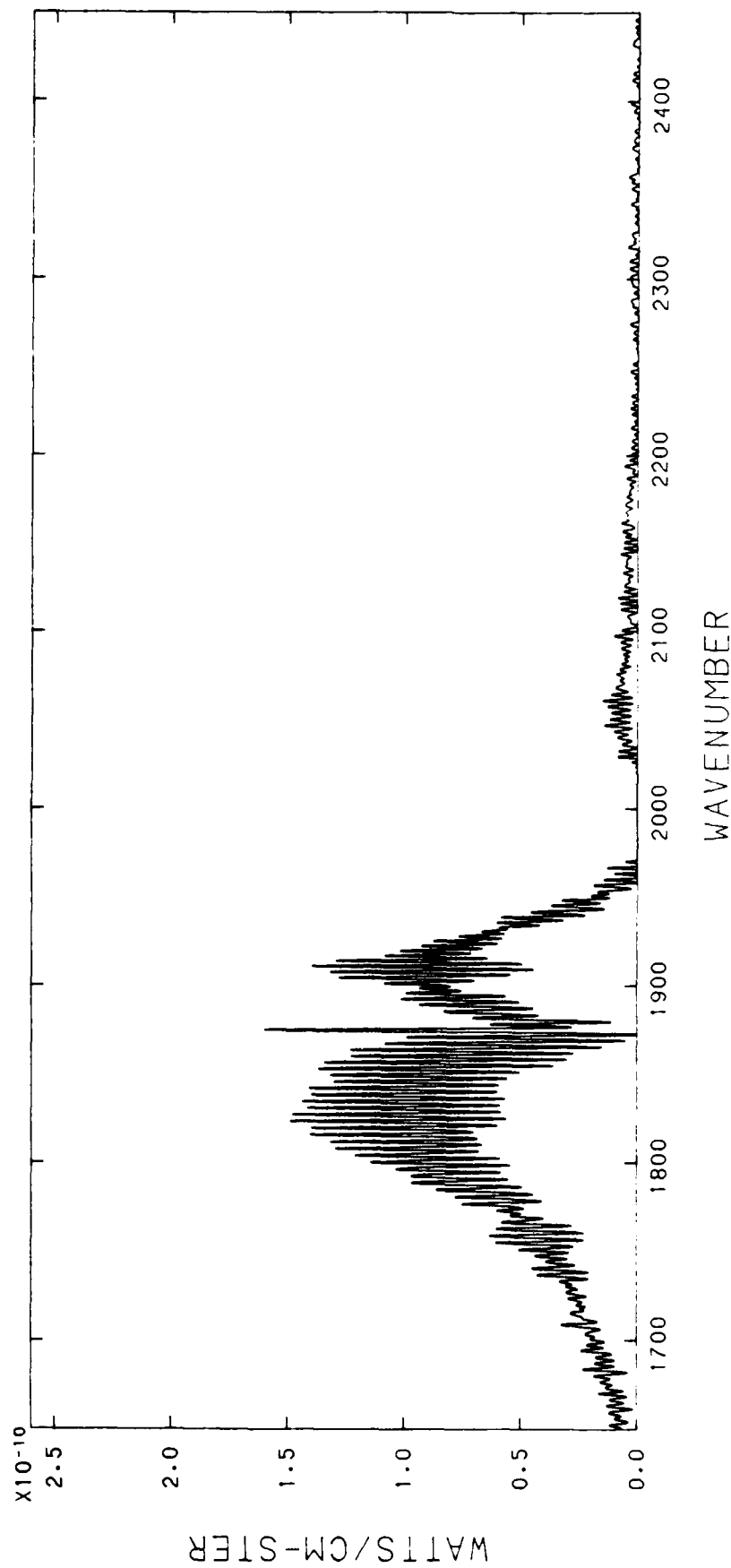
24-NOV-83 00:40





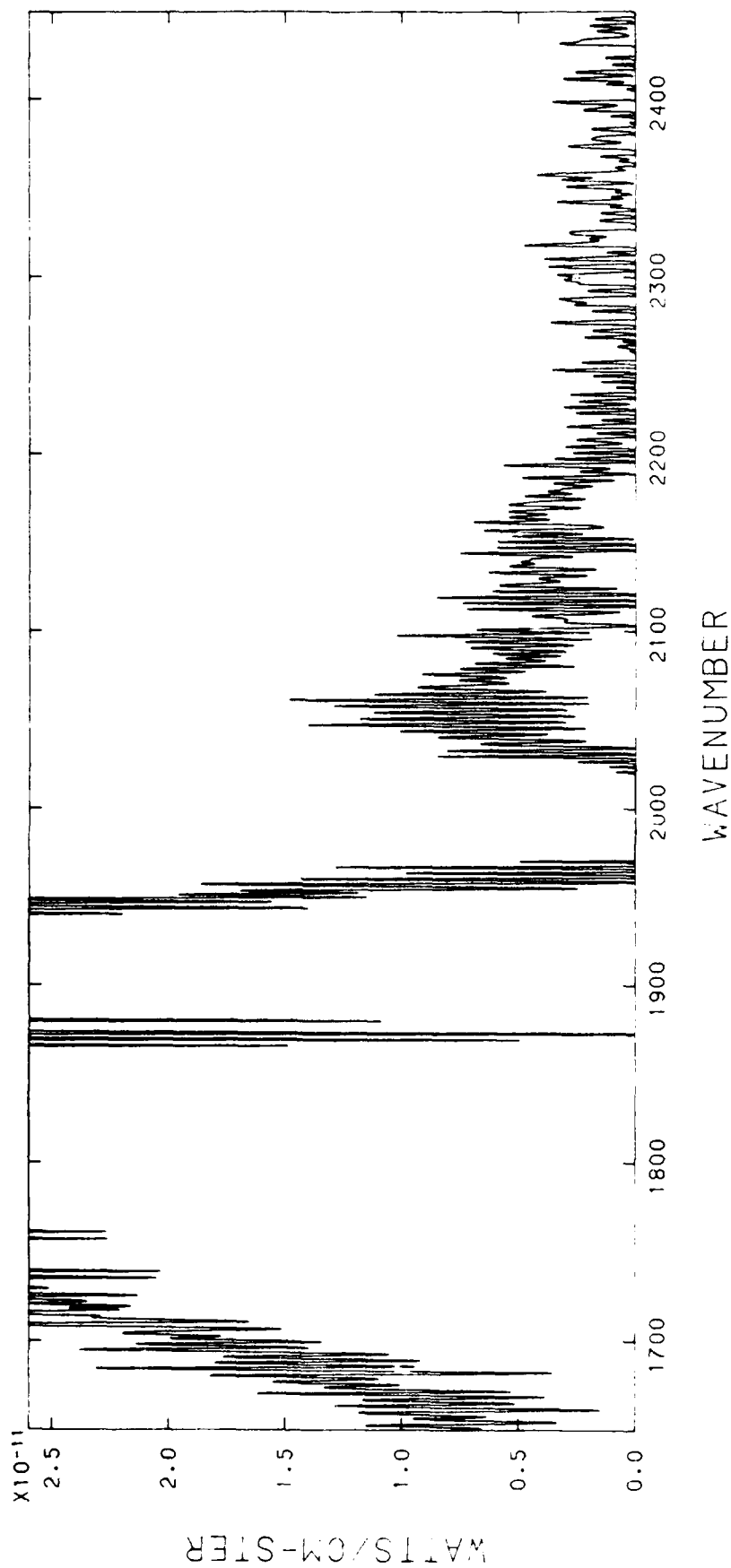
FILE 112, TIME 9:10:44.400, ALT 113.4-112.2 KM

24-NOV-83 00:40

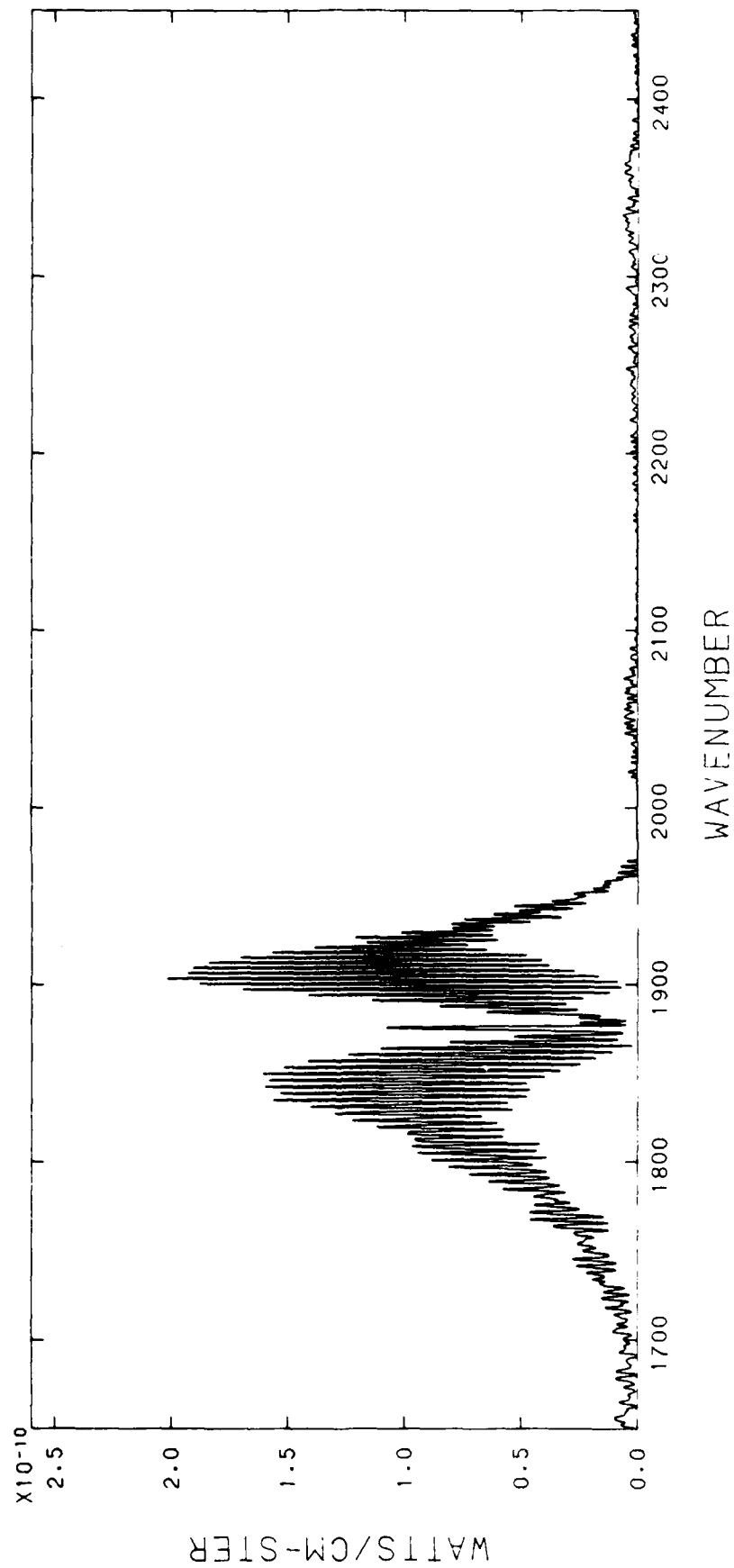


FILE 113, TIME 9:10:46. 24, ALT 112.2-111.1 KM

24-NOV-83 00:40

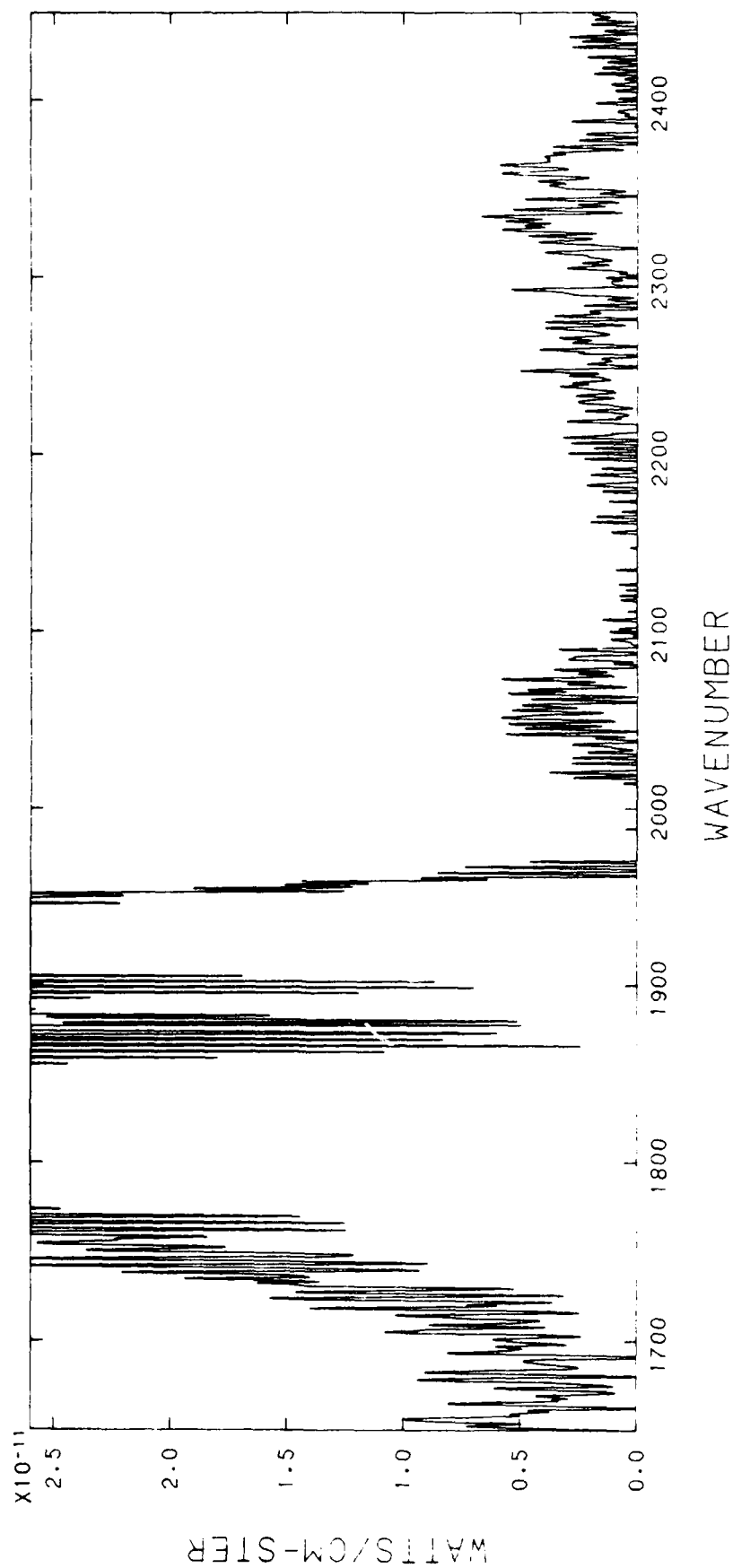


FILE 113, TIME 9:10:46. 24, ALT 112.2-111.1 KM



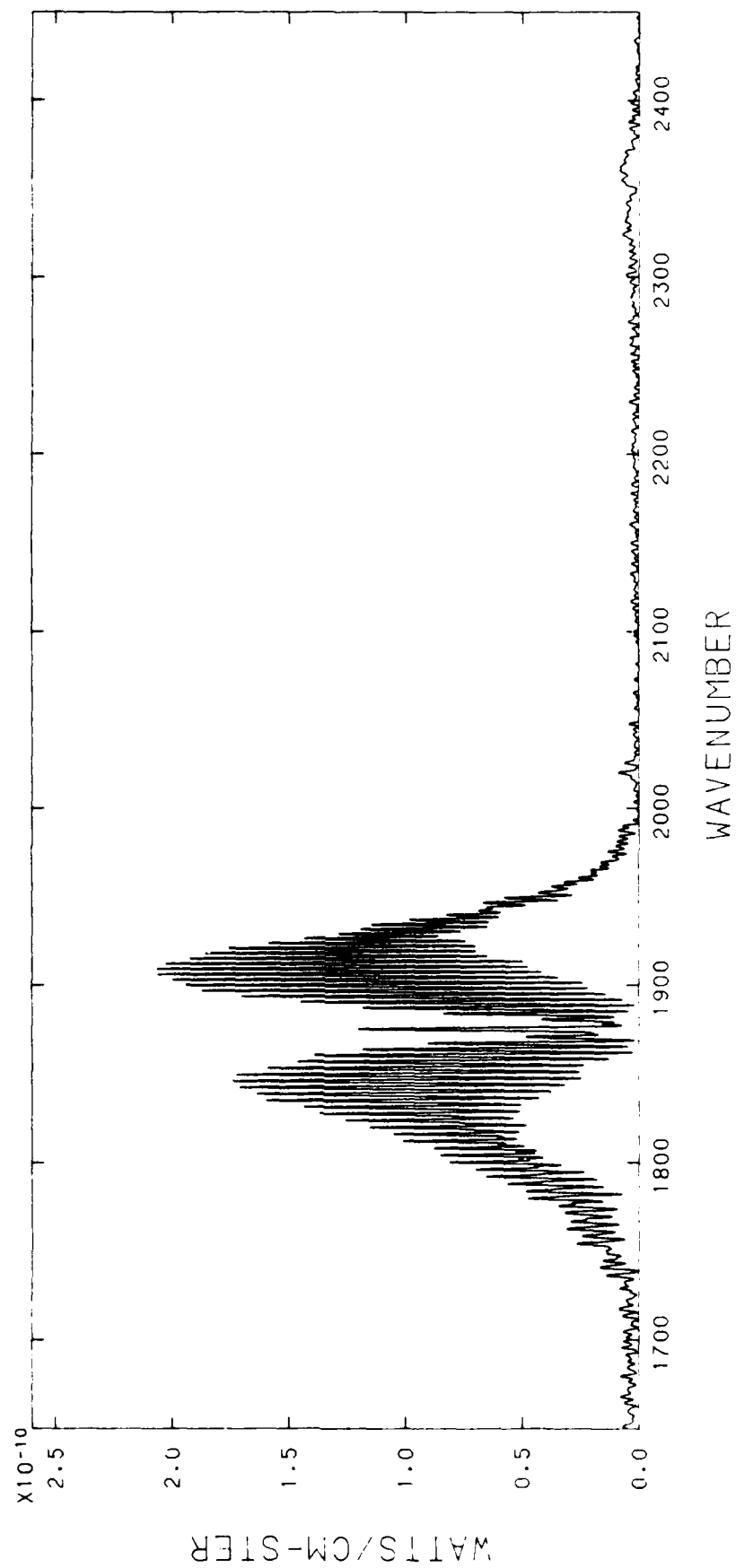
FILE 114, TIME 9:10:47.656, ALT 111.1--109.9 KM

24-NOV-83 00:40



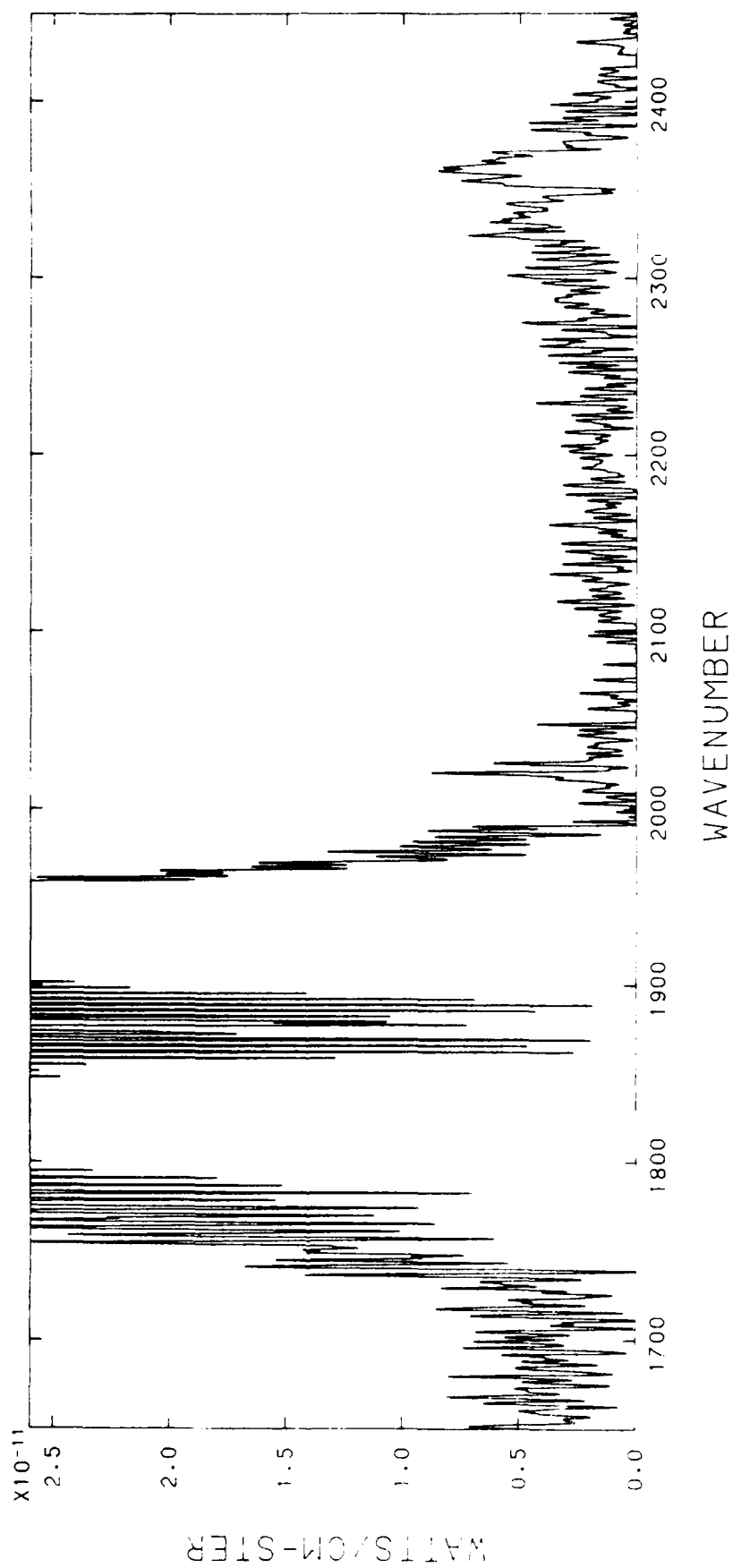
FILE 114, TIME 9:10:47.656, ALI 111.1-109.9 KM

24-NOV-83 00:40

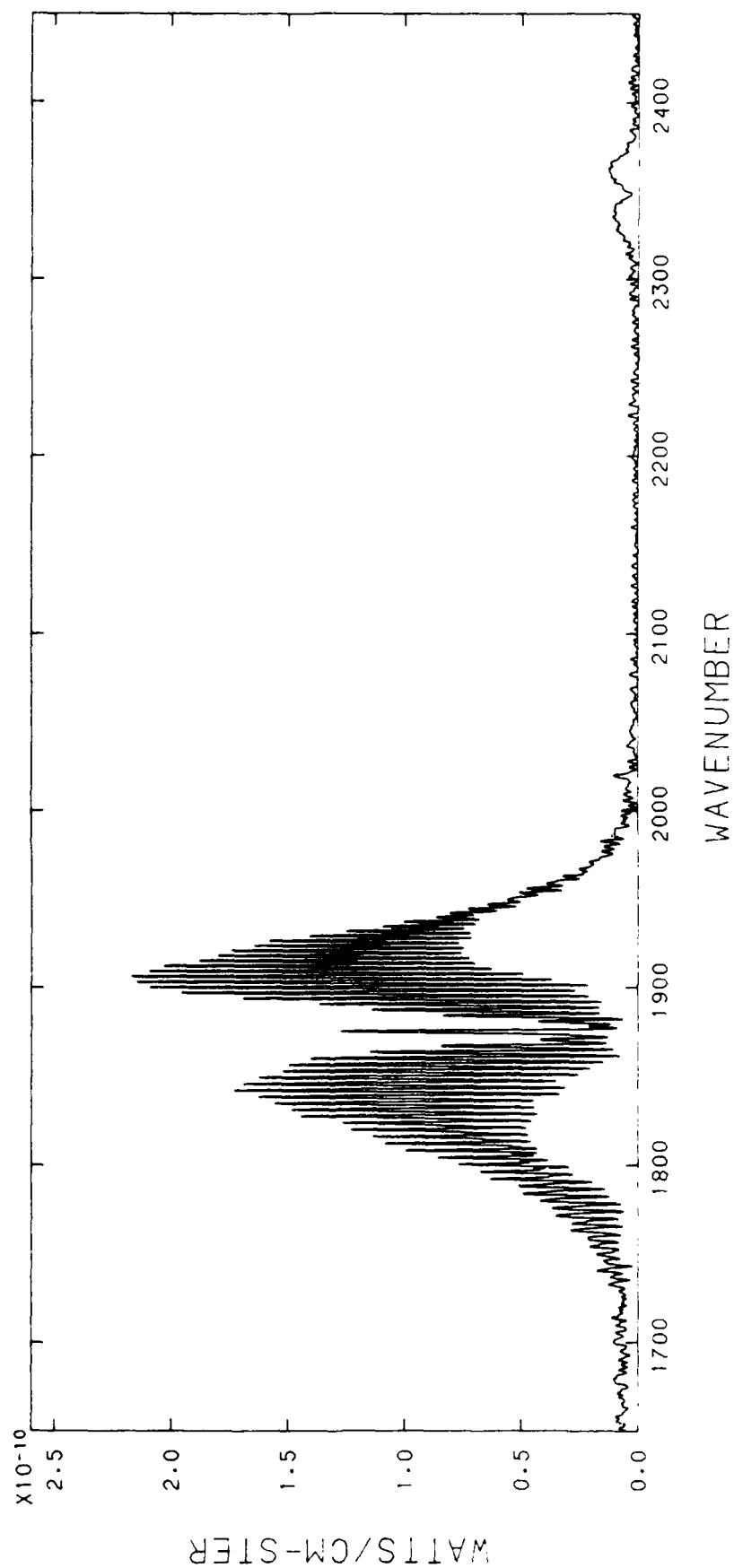


FILE 115, TIME 9:10:49.288, ALT 109.9-108.6 KM

24-NOV-83 00:41



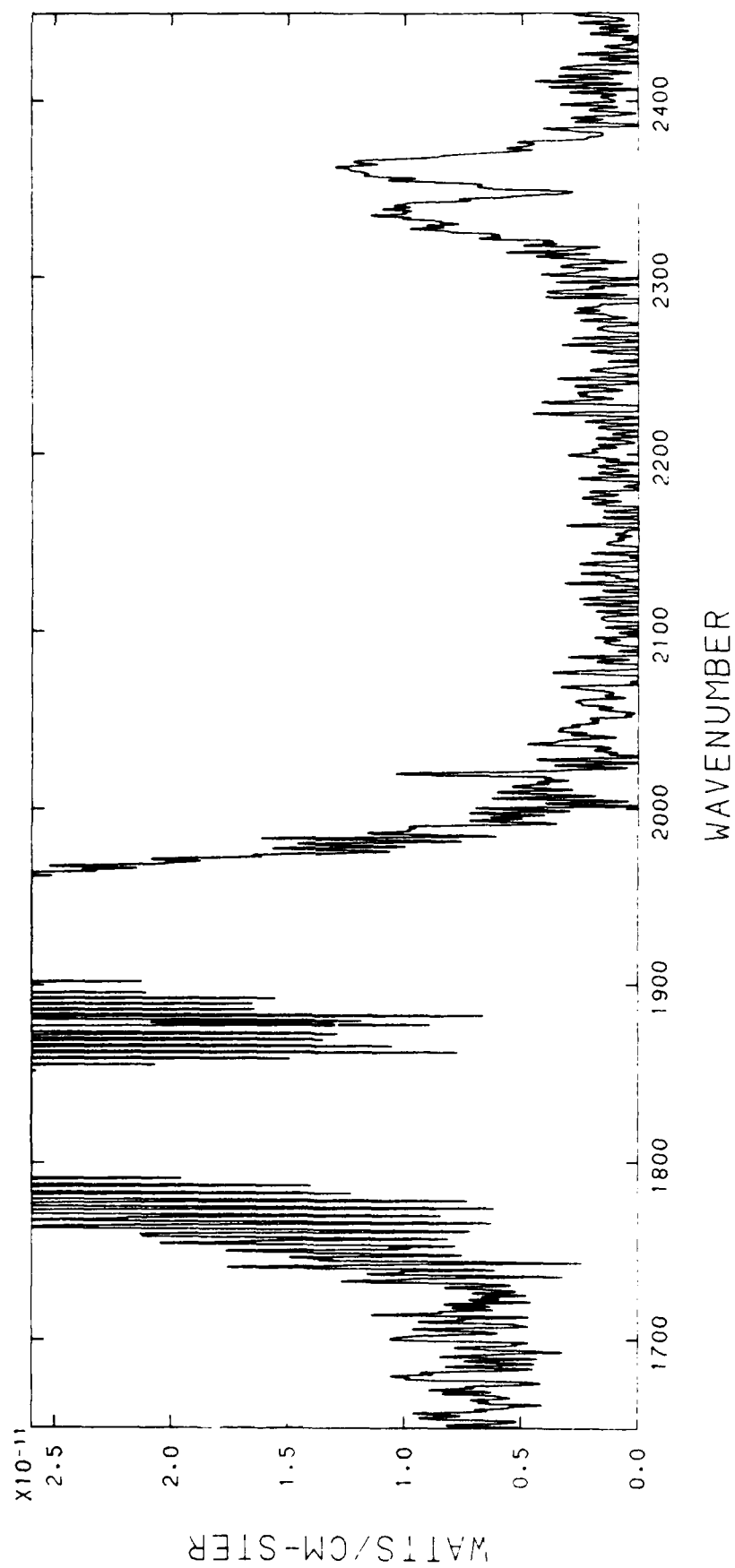
FILE 115, TIME 9:10:49.288, ALT 109.9-108.6 KM



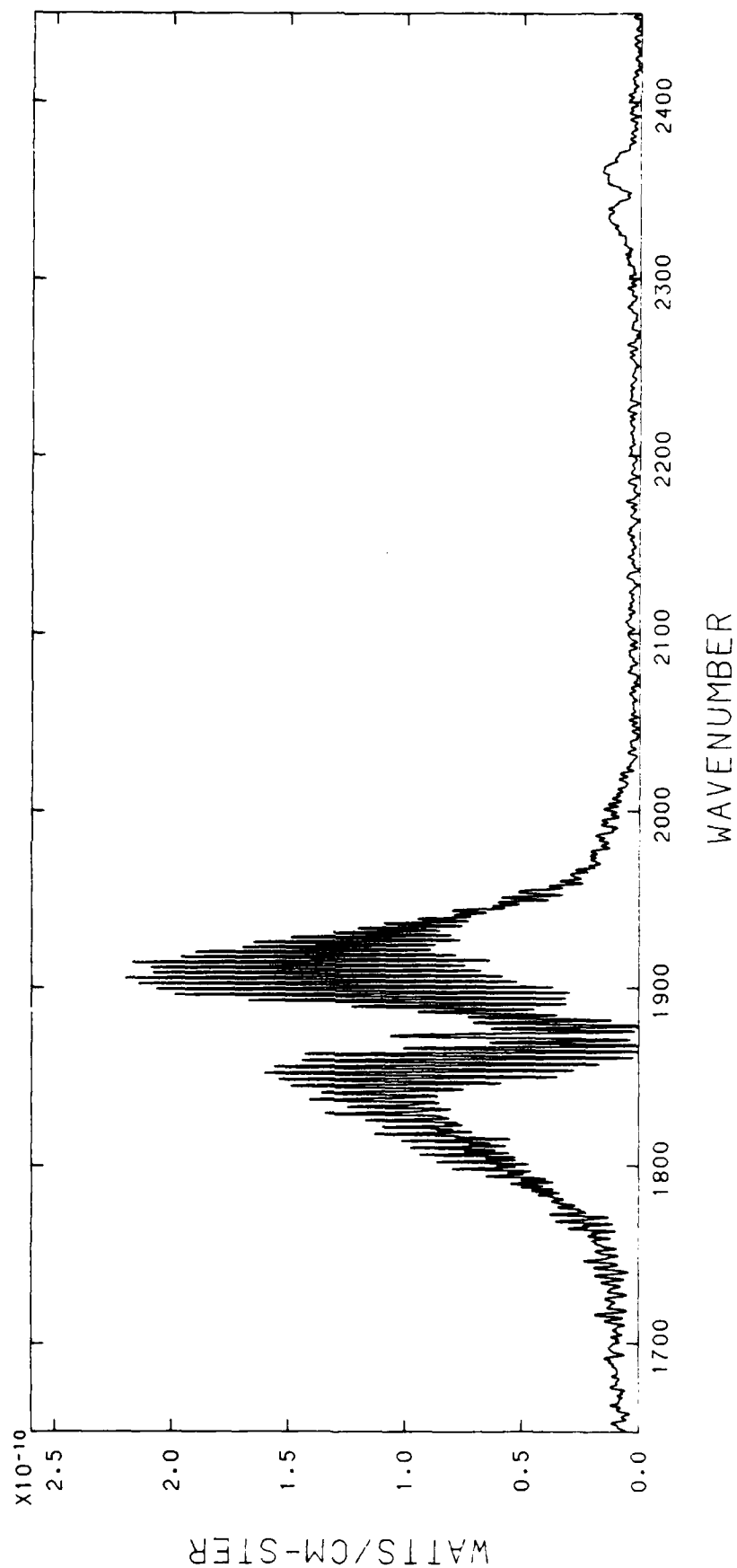
FILE 116, TIME 9:10:50.914, ALT 108.6-107.4 KM

24-NOV-83 00:41



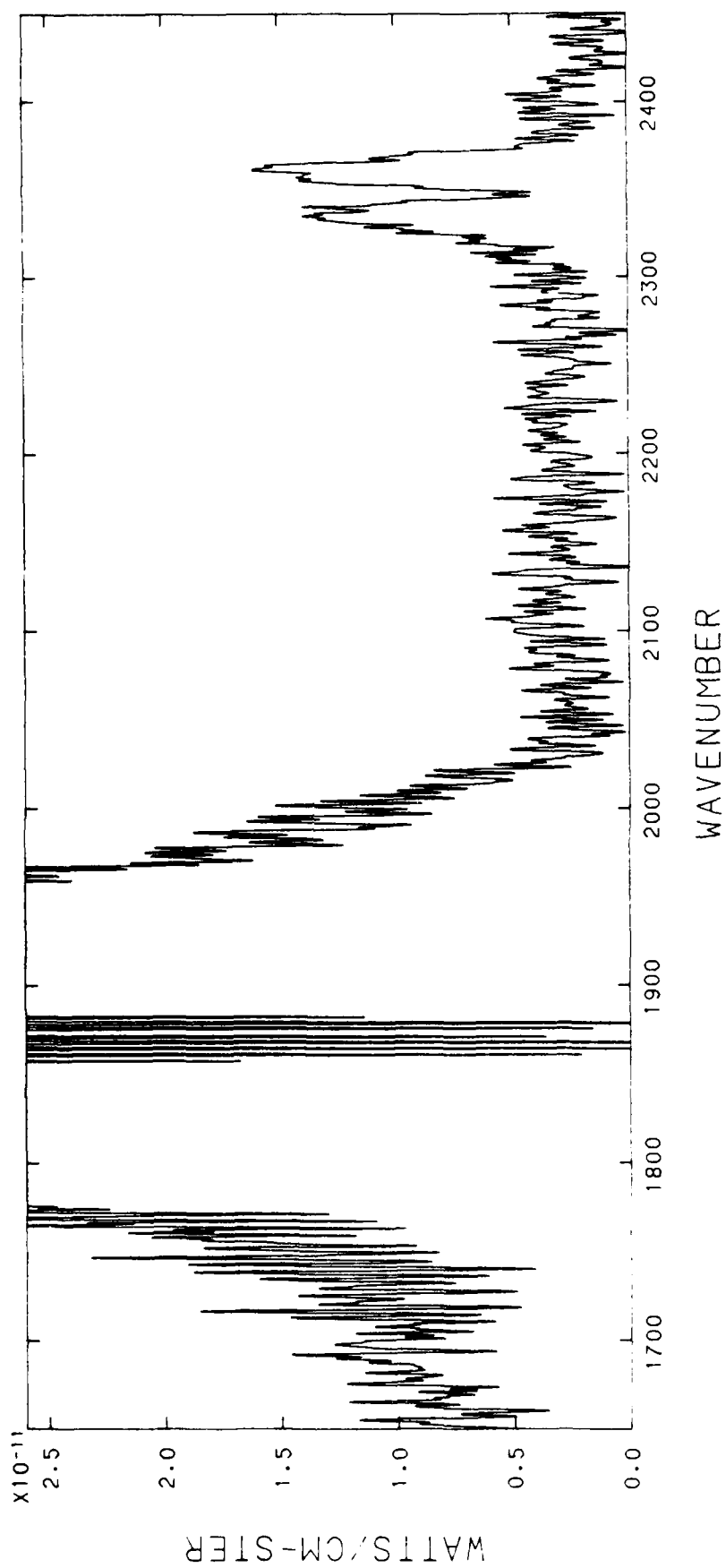


FILE 116, TIME 9:10:50.914, ALT 108.6-107.4 KM



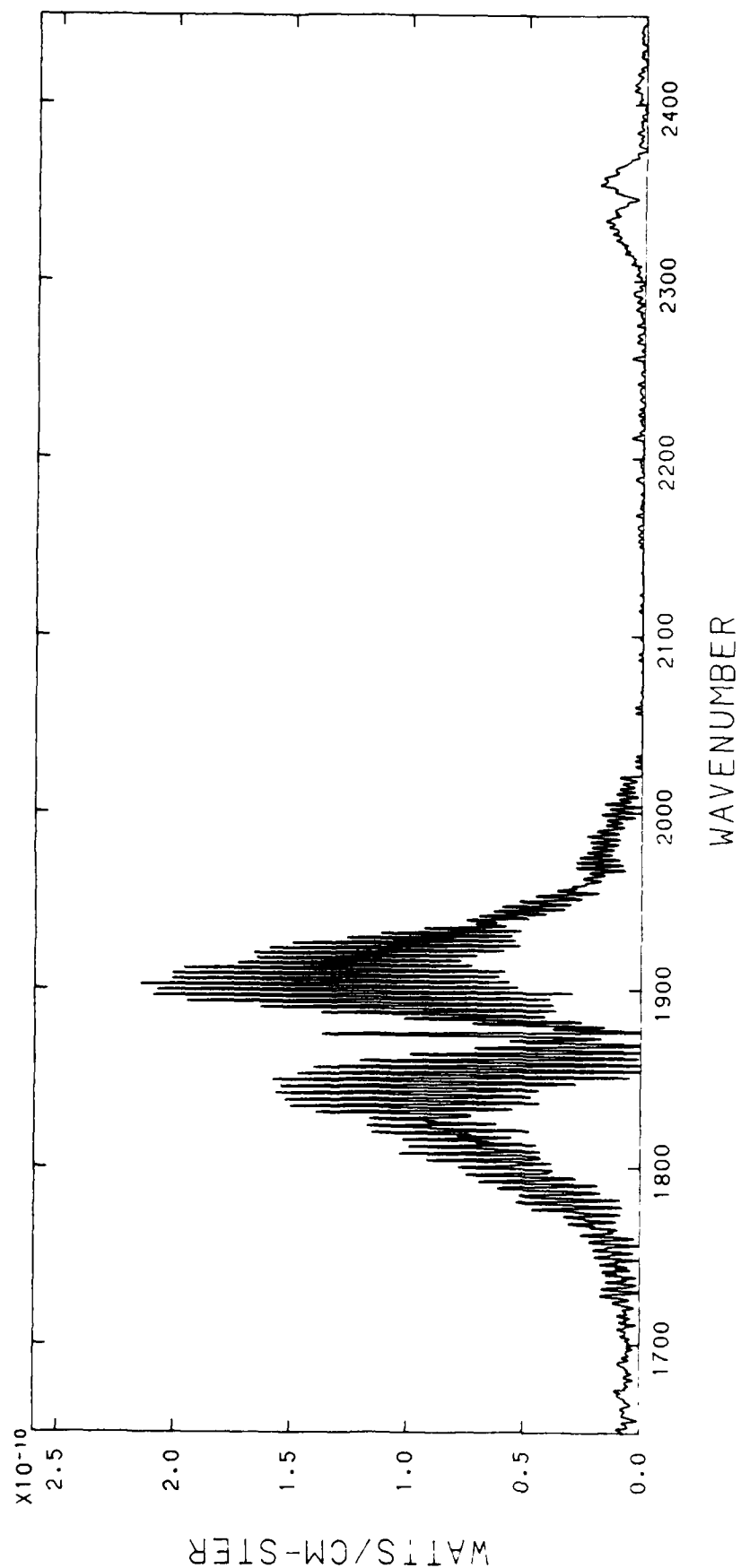
FILE 117, TIME 9:10:52.544, ALT 107.4-106.1 KM

24-NOV-83 00:41



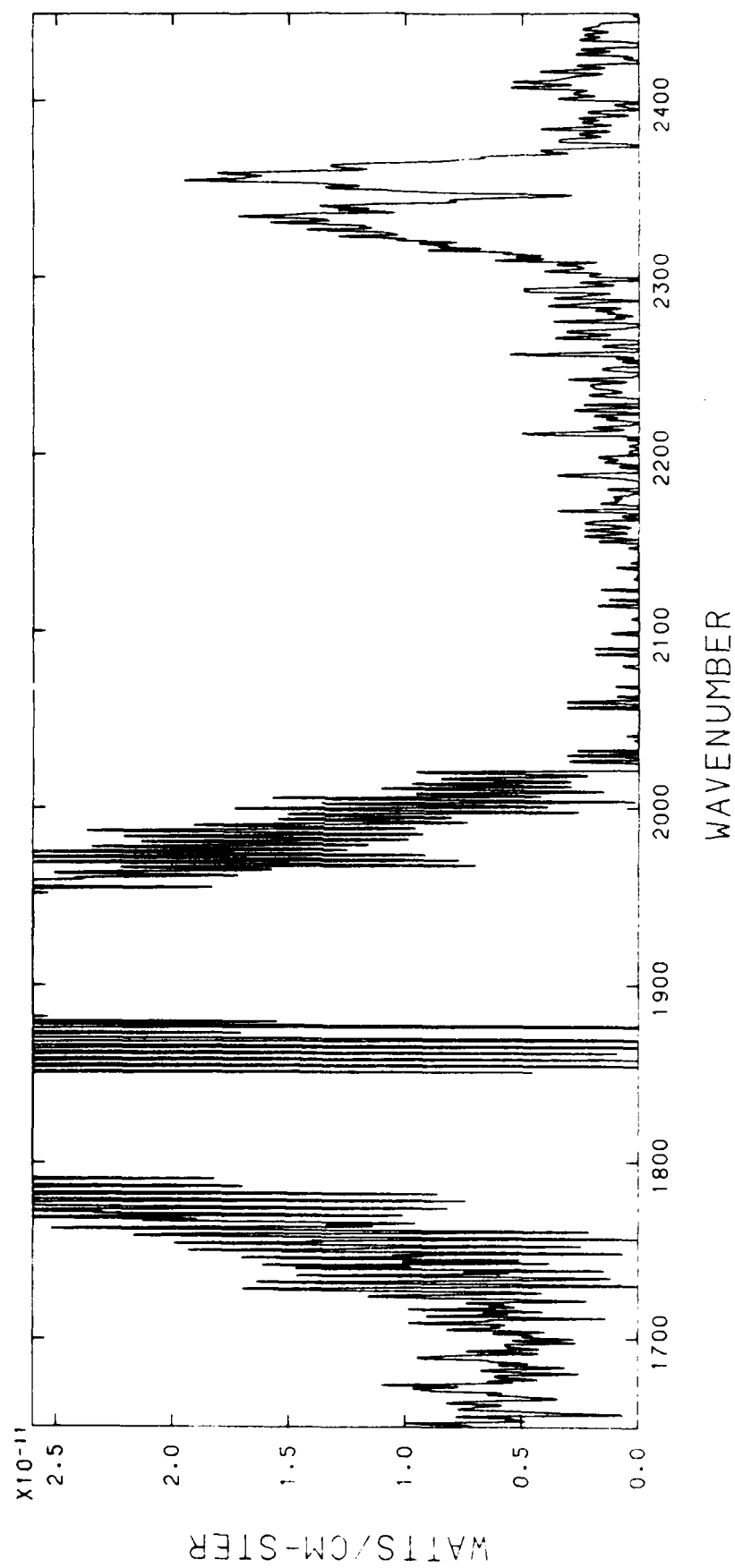
FILE 117, TIME 9:10:52.544, ALT 107.4-106.1 KM

24-NOV-83 00:41

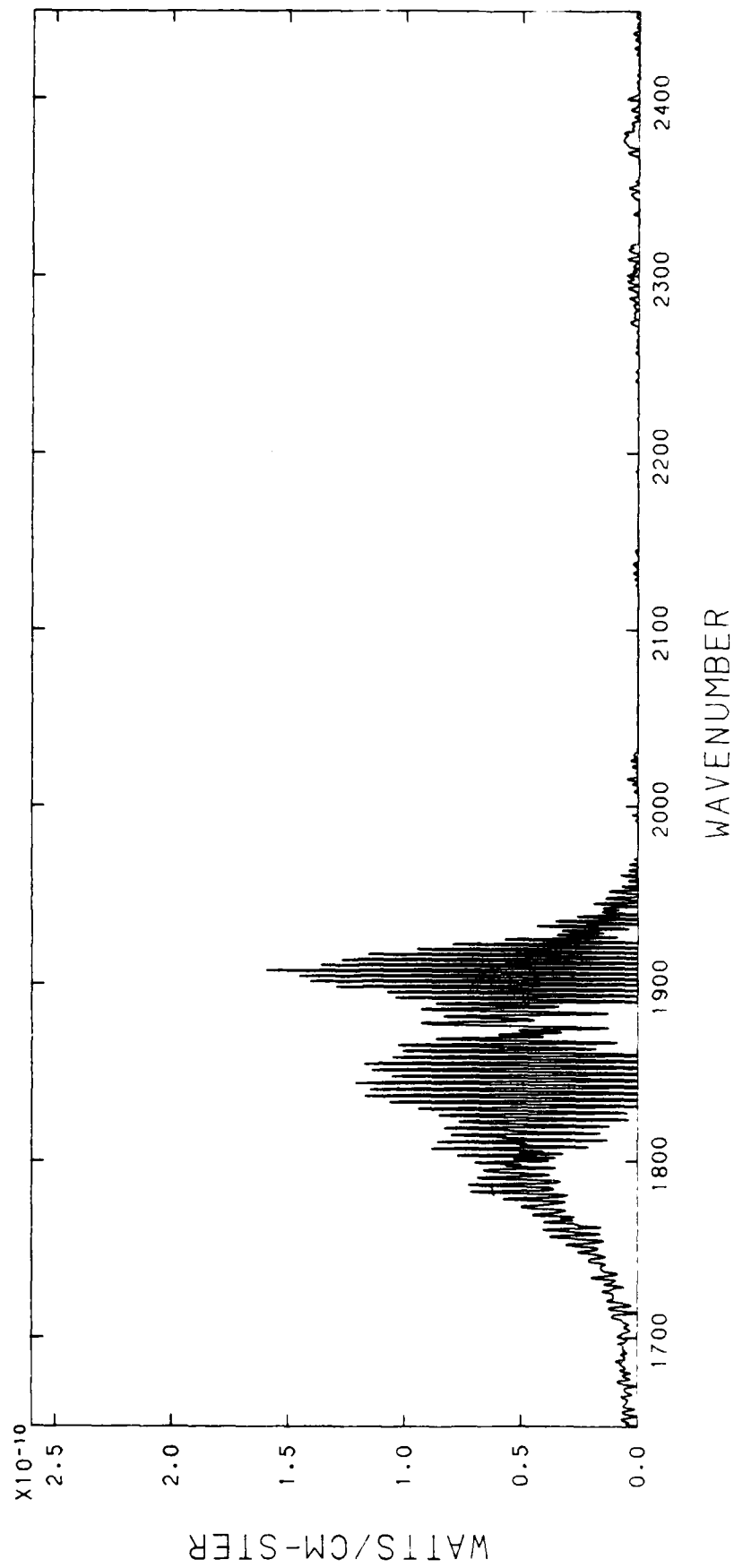


FILE 118, TIME 9:10:54.168, ALT 106.1-104.8 KM

24-NOV-83 00:41

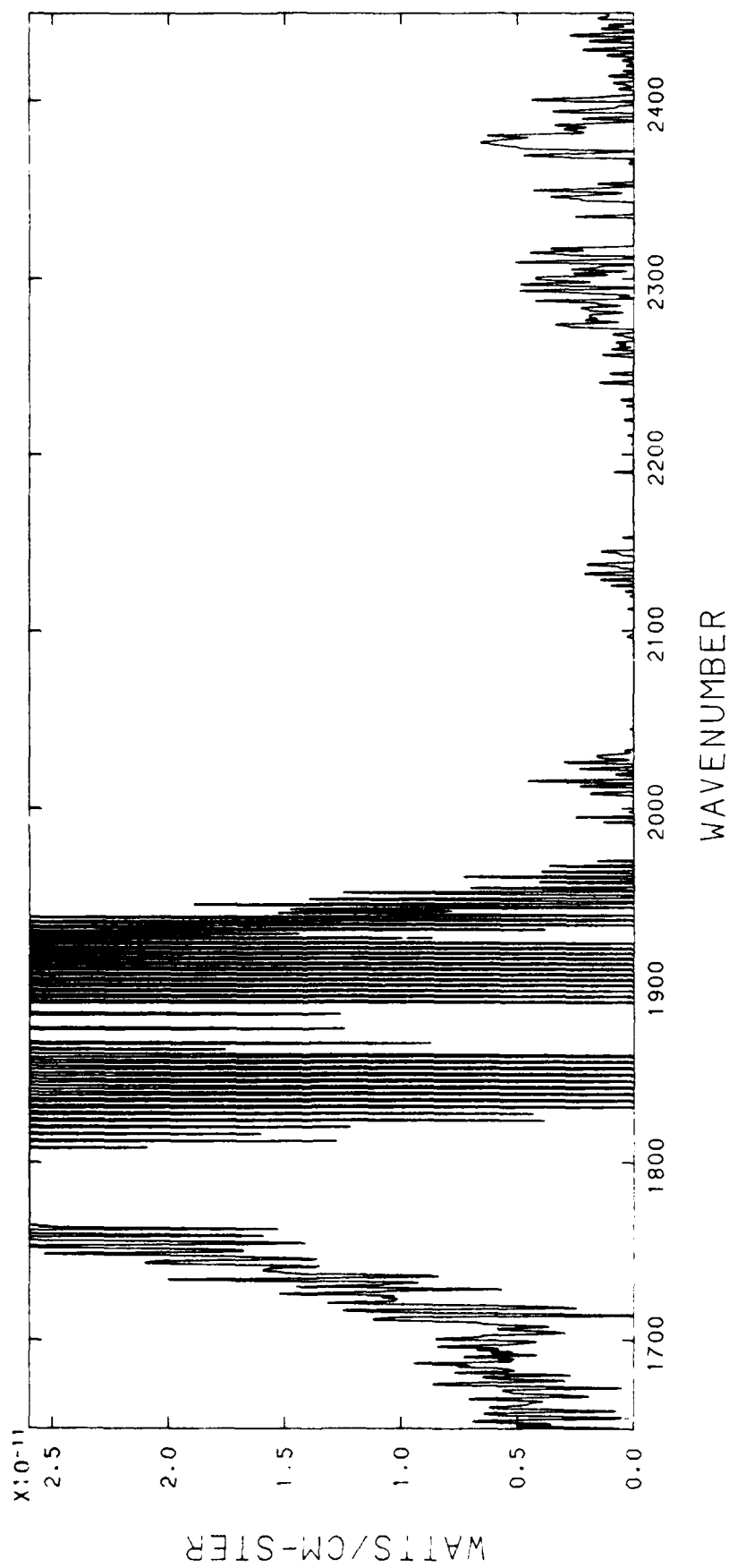


FILE 118, TIME 9:10:54.168, ALT 106.1-104.8 KM

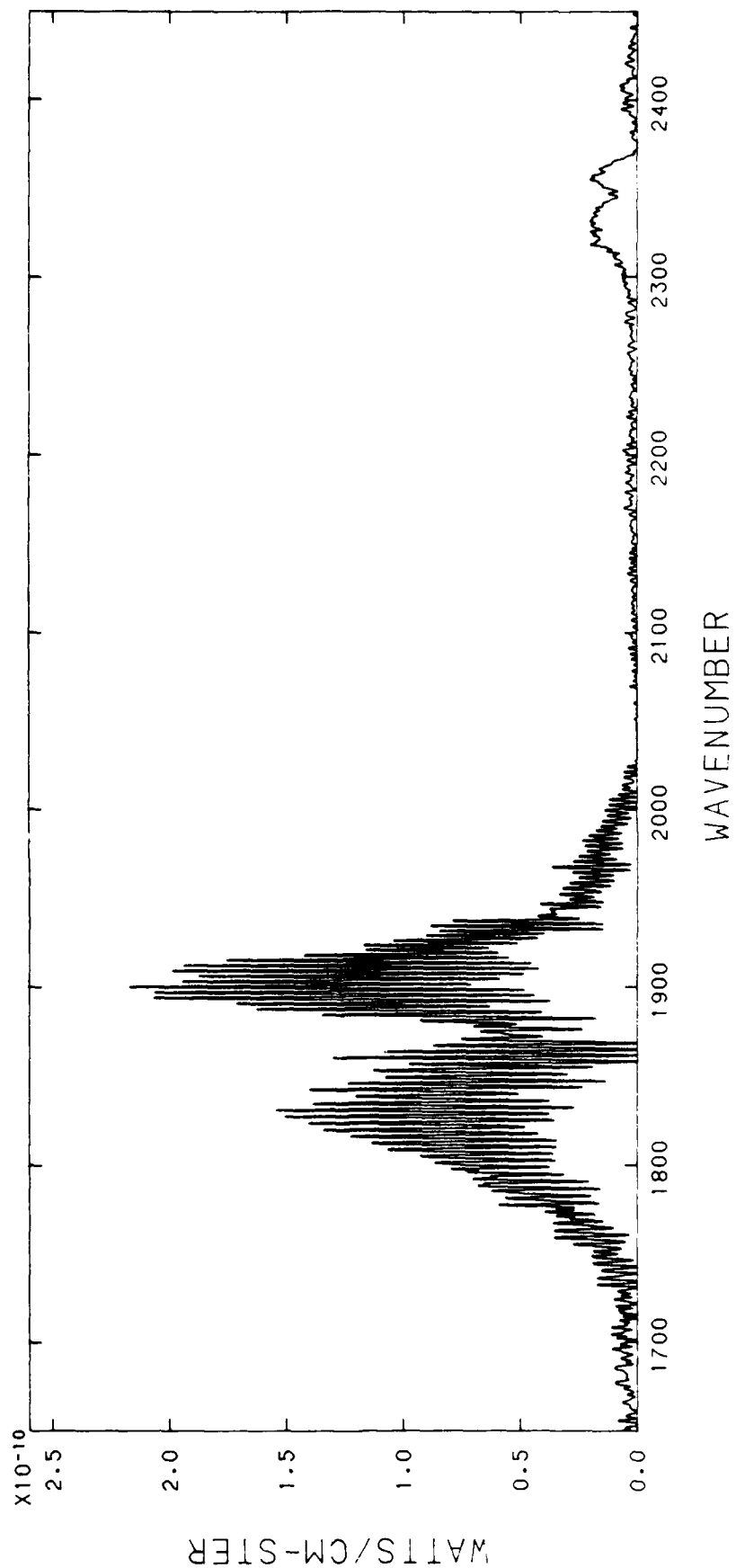


FILE 119, TIME 9:10:55.796, ALT 104.8-103.5 KM

24-NOV-83 00:41



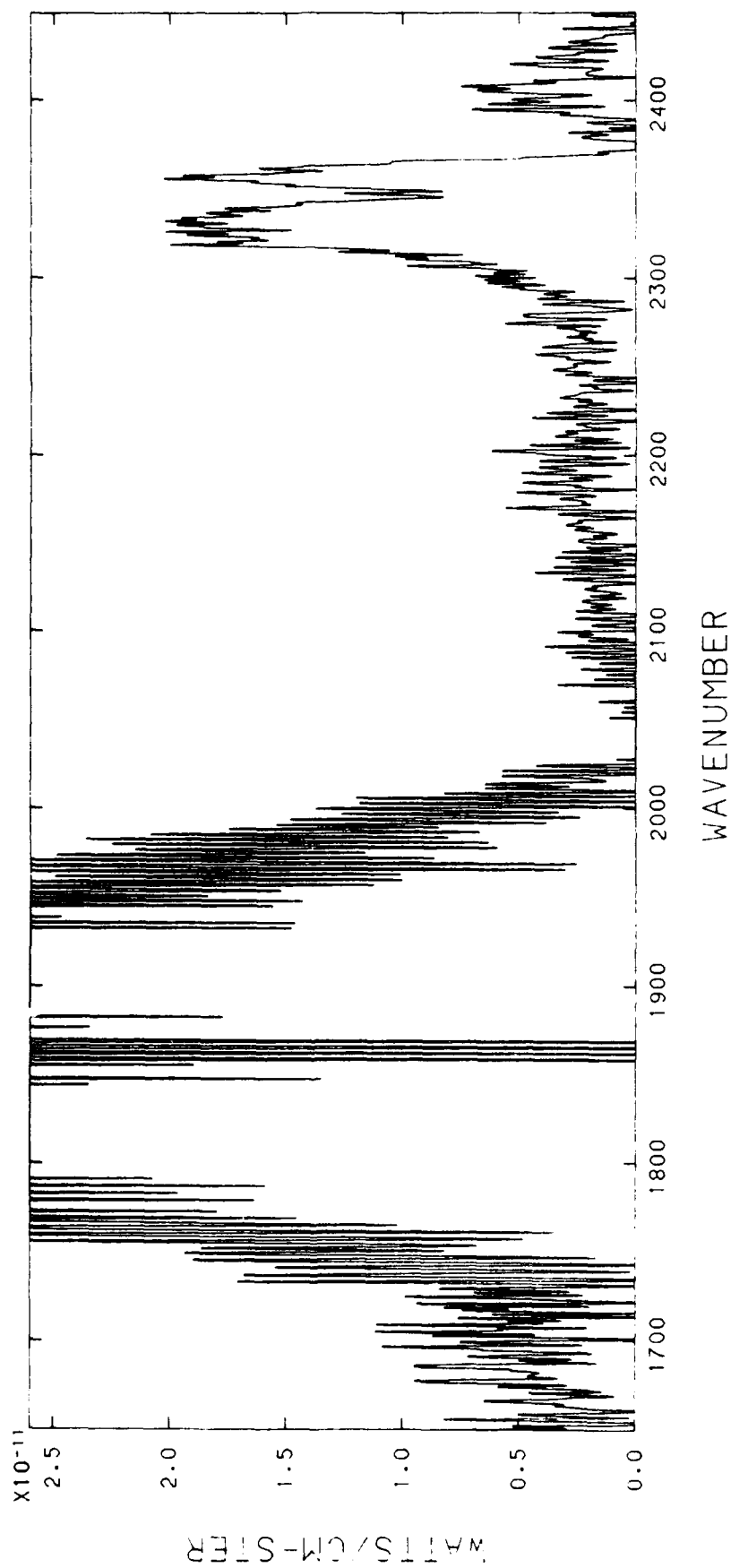
FILE 119, TIME 9:10:55.796, ALT 104.8-103.5 KM



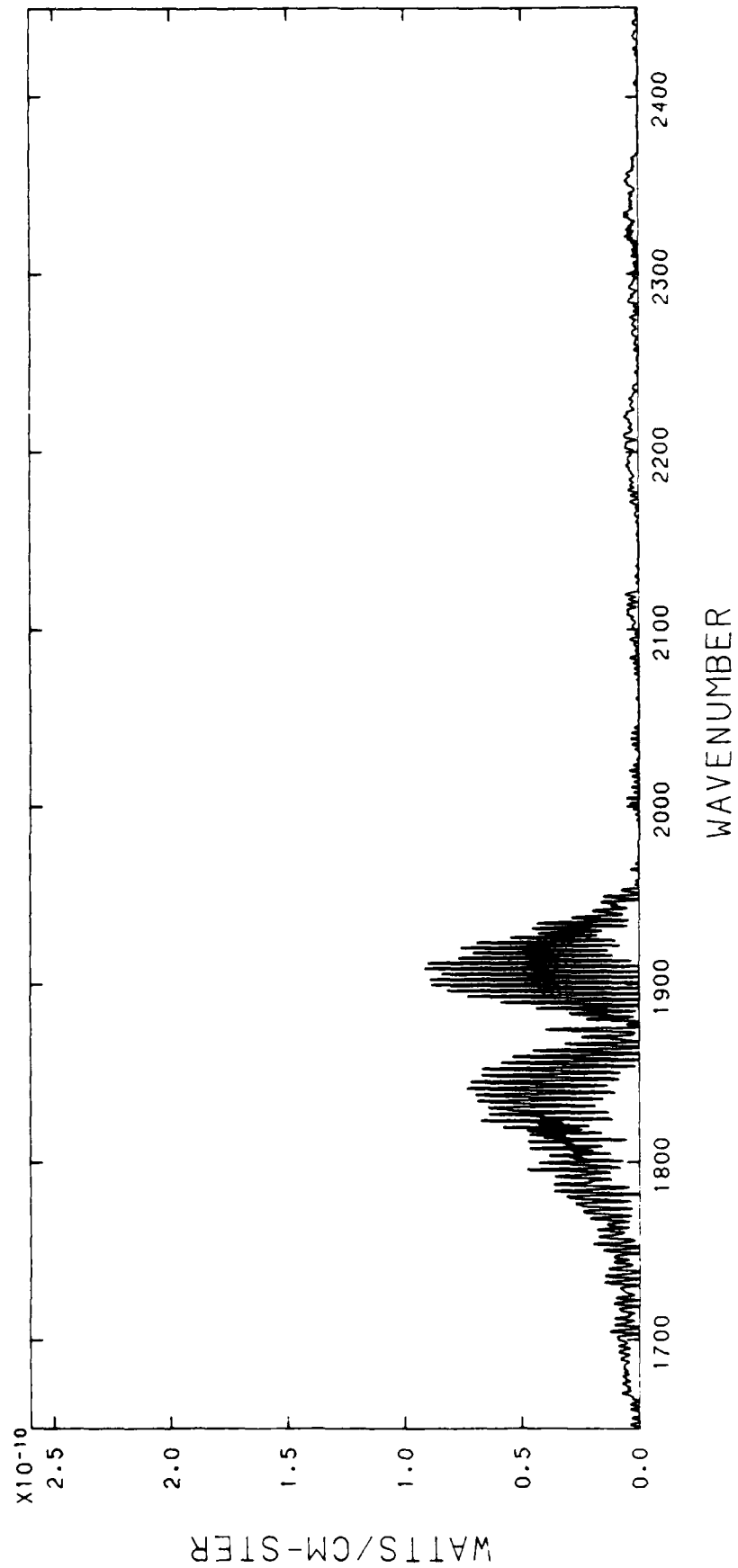
FILE 120, TIME 9:10:57.420, ALT 103.5-102.1 KM

24-NOV-83 00:41

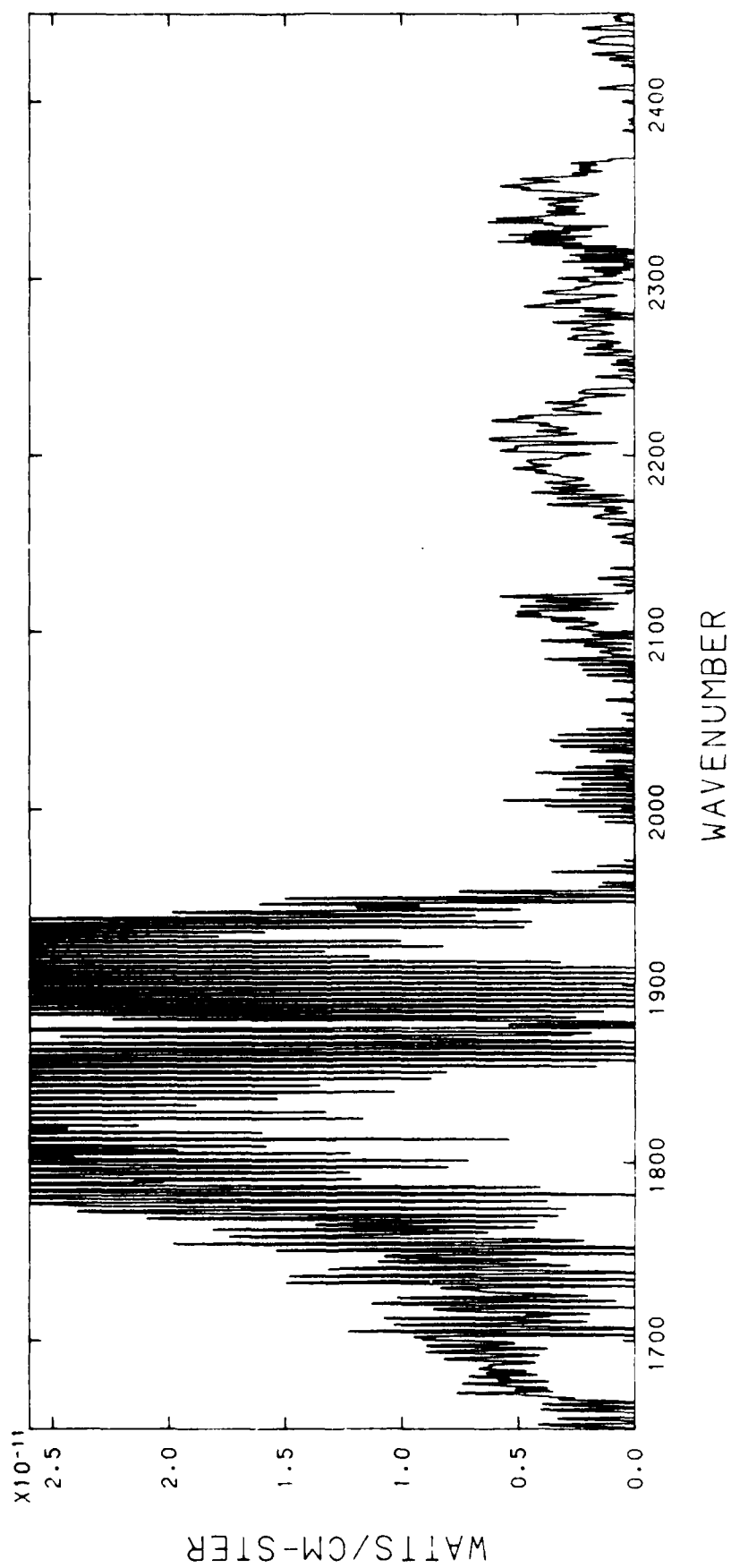




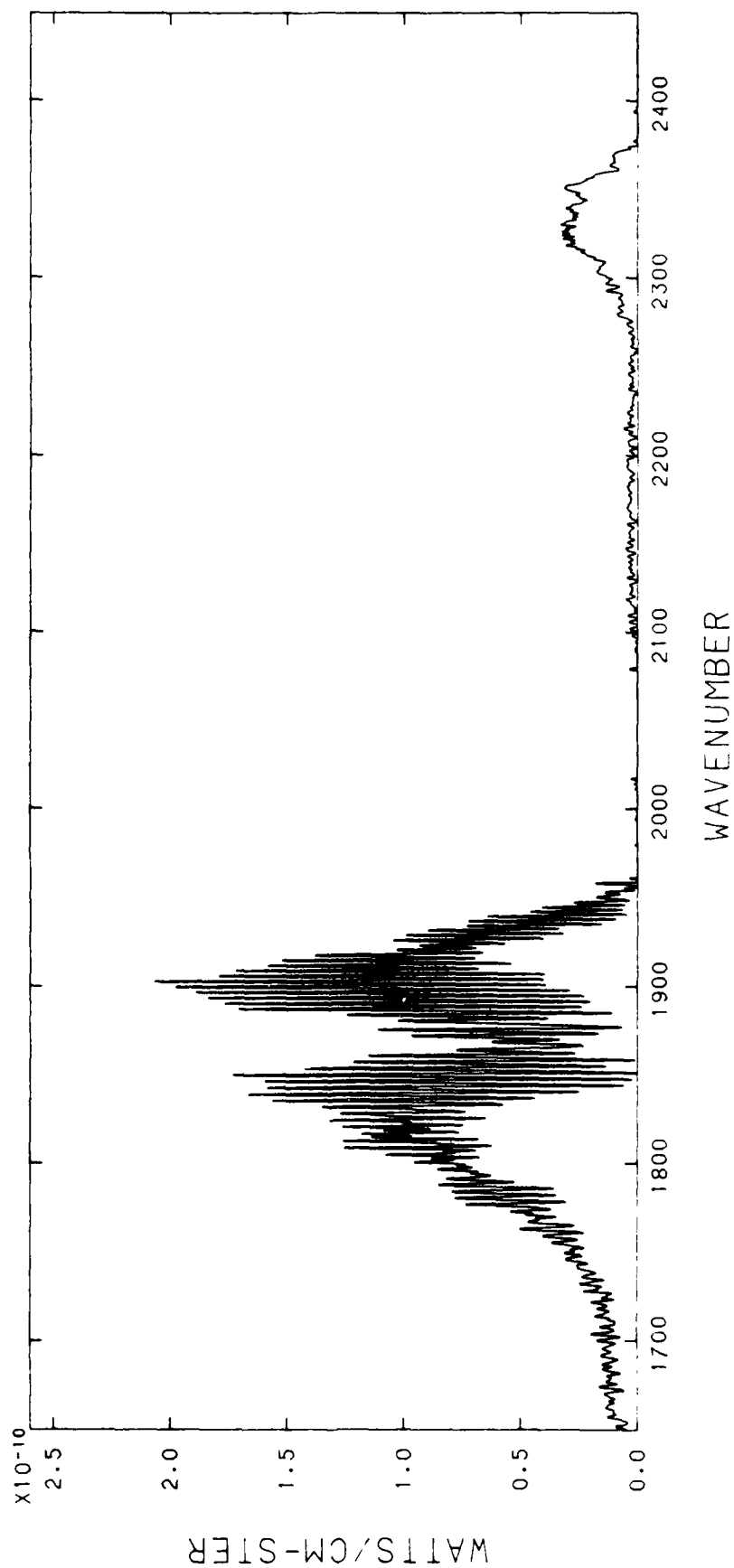
FILE 120, TIME 9:10:57.420, ALT 103.5-102.1 KM



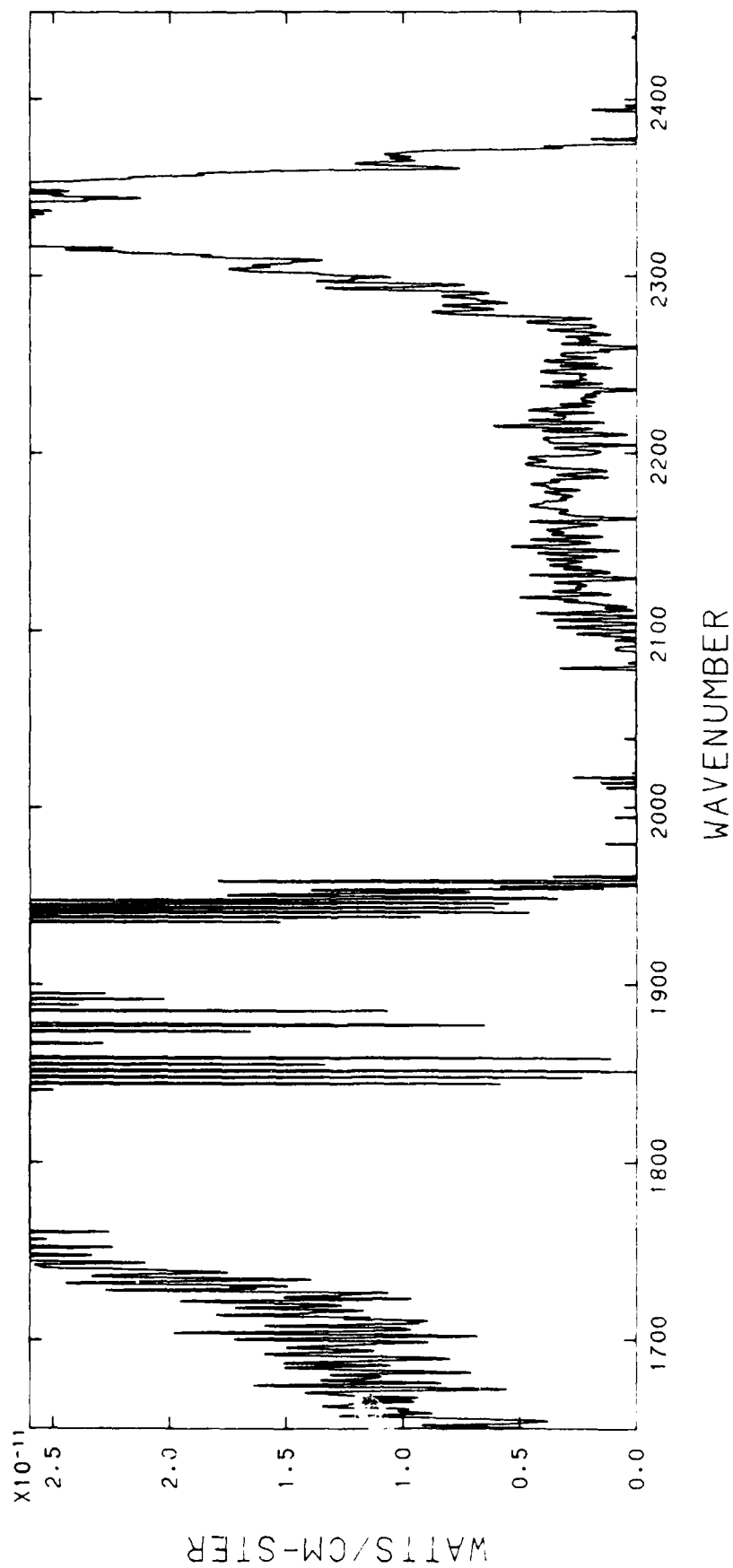
FILE 121, TIME 9:10:59.46, ALT 102.1-100.8 KM



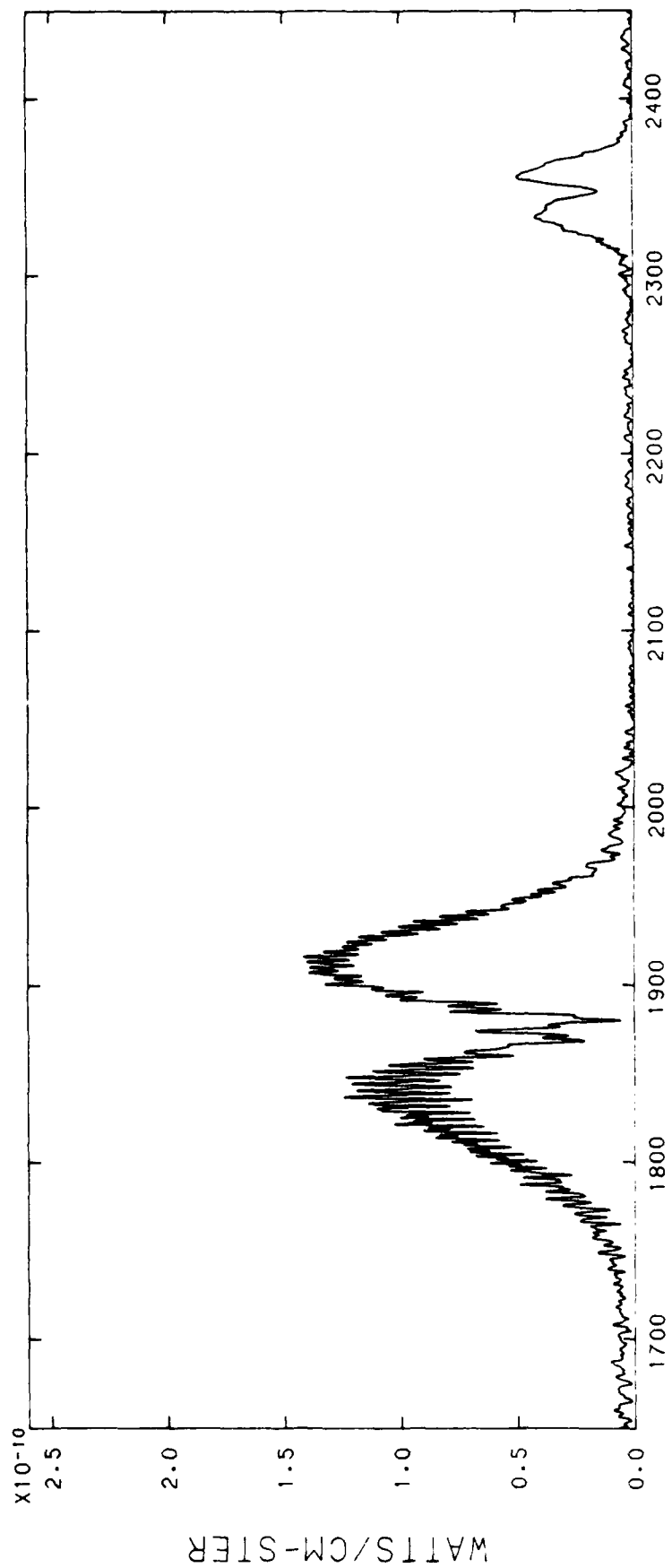
FILE 121, TIME 9:10:59. 46, ALT 102.1-100.8 KM



FILE 122. TIME 9:11: 0.672, ALT 100.8-- 99.4 KM



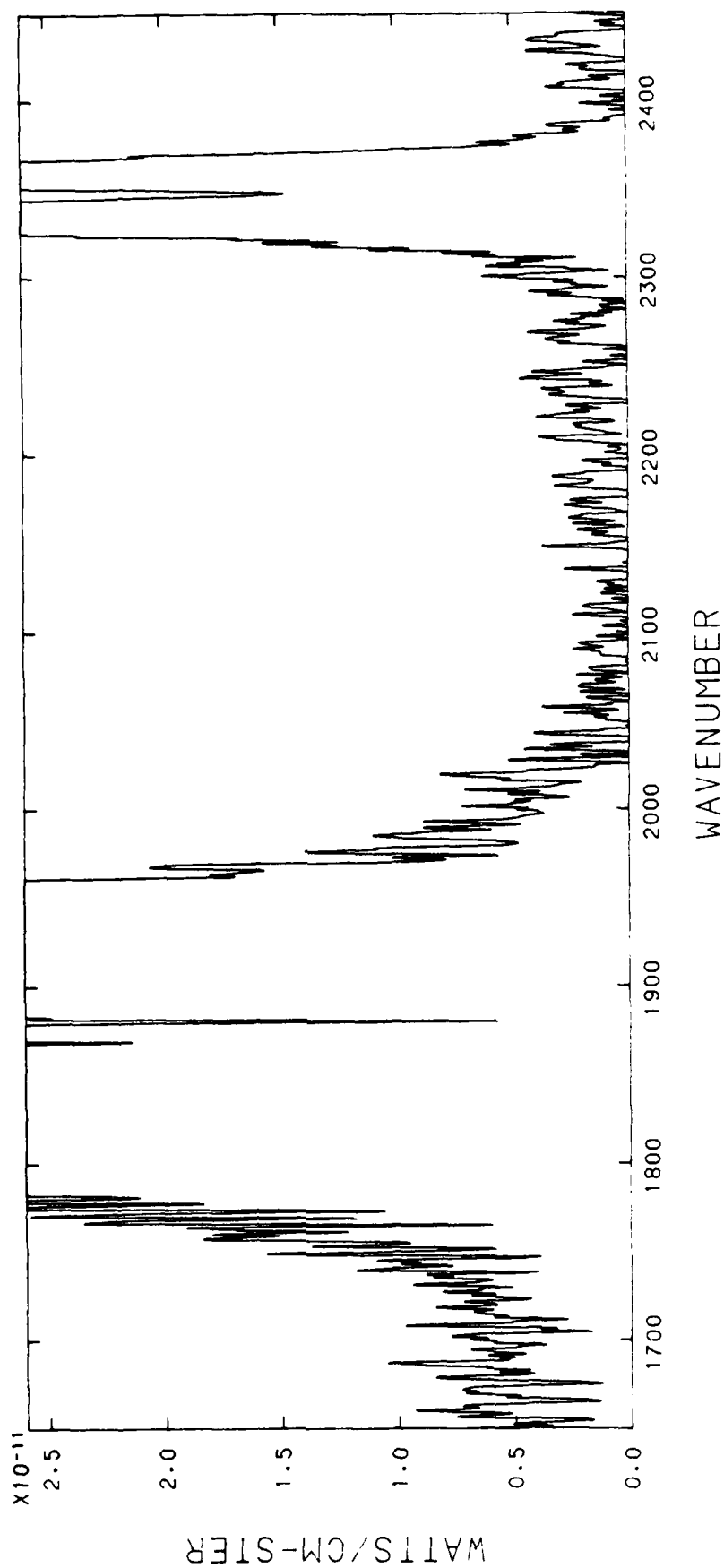
FILE 122, TIME 9:11: 0.672, ALT 100.8- 99.4 KM



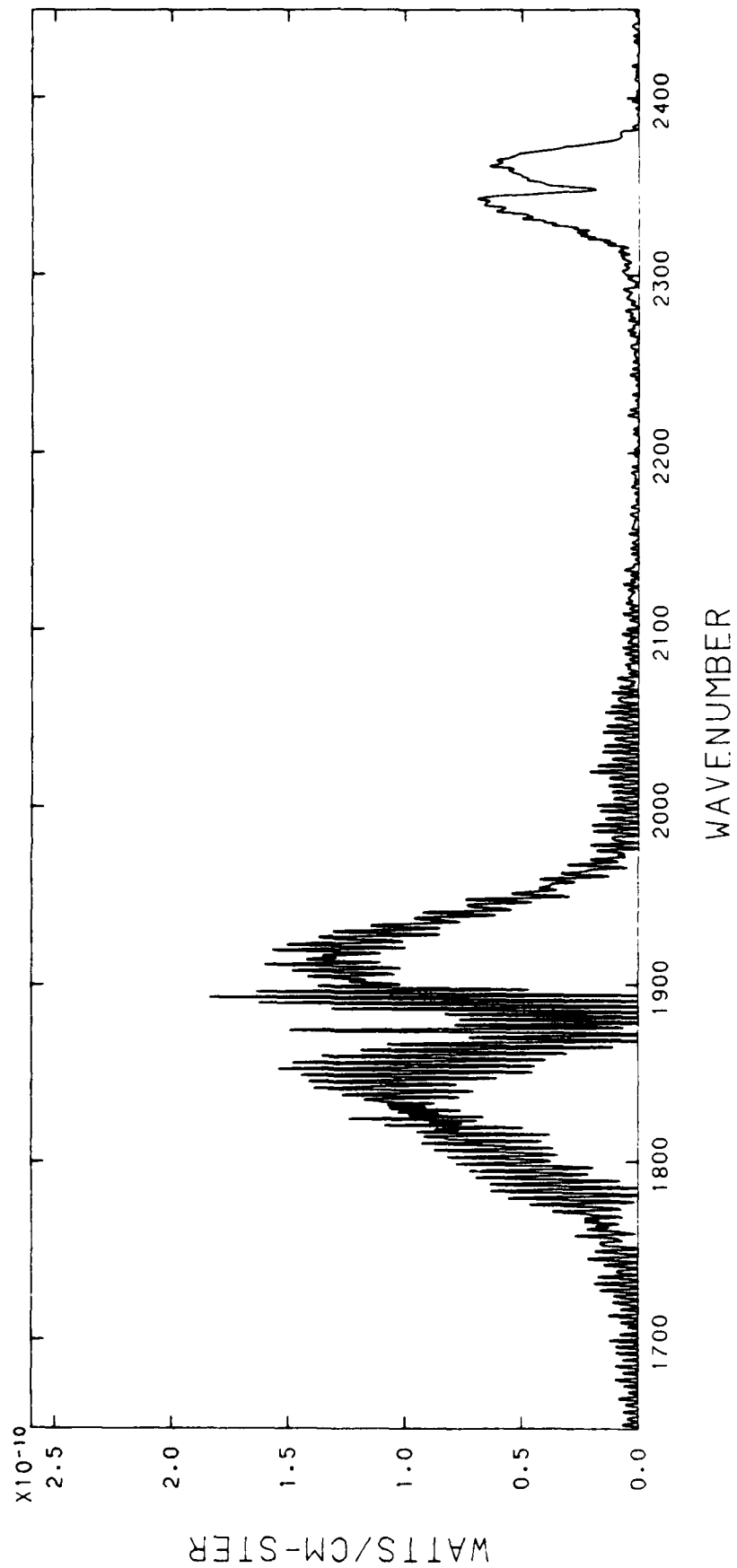
WAVENUMBER

FILE 123, TIME 9:11: 2.298, ALT 99.4- 98.0 KM

24-NOV-R3 00:41



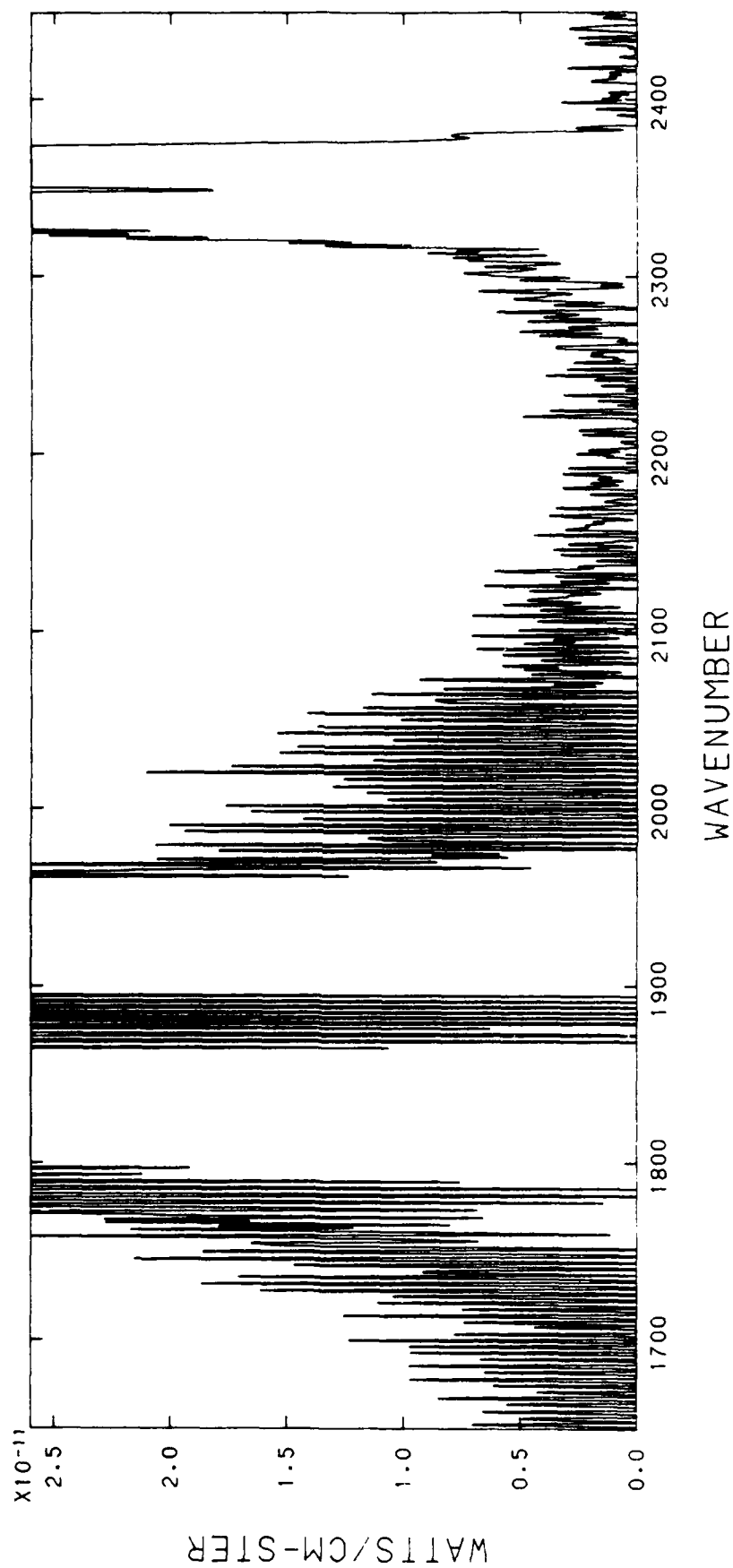
FILE 123, TIME 9:11: 2.298, ALT 99.4- 98.0 KM



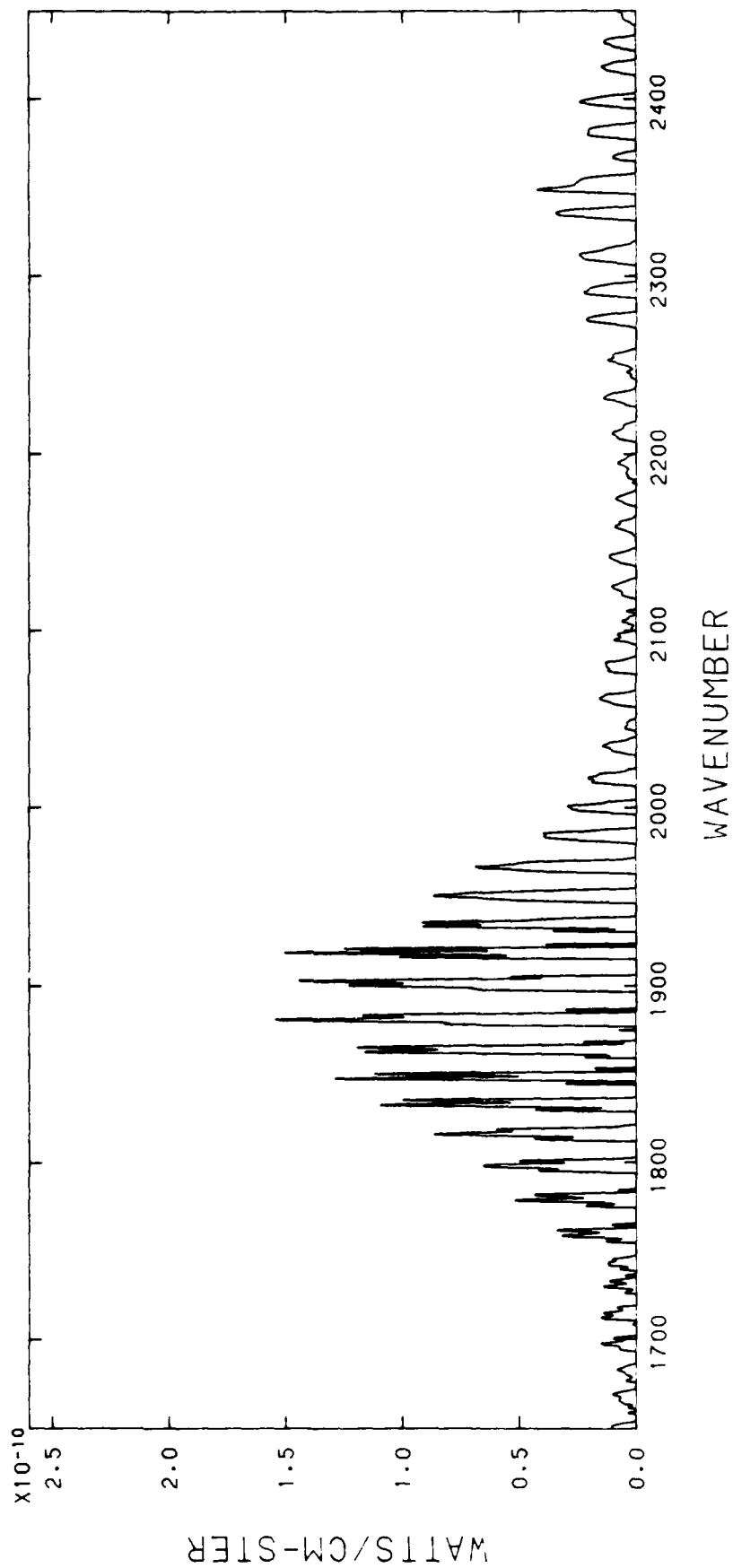
FILE 124, TIME 9:11: 3.924, ALT 98.0- 96.5 KM

24-NOV-83 00:41



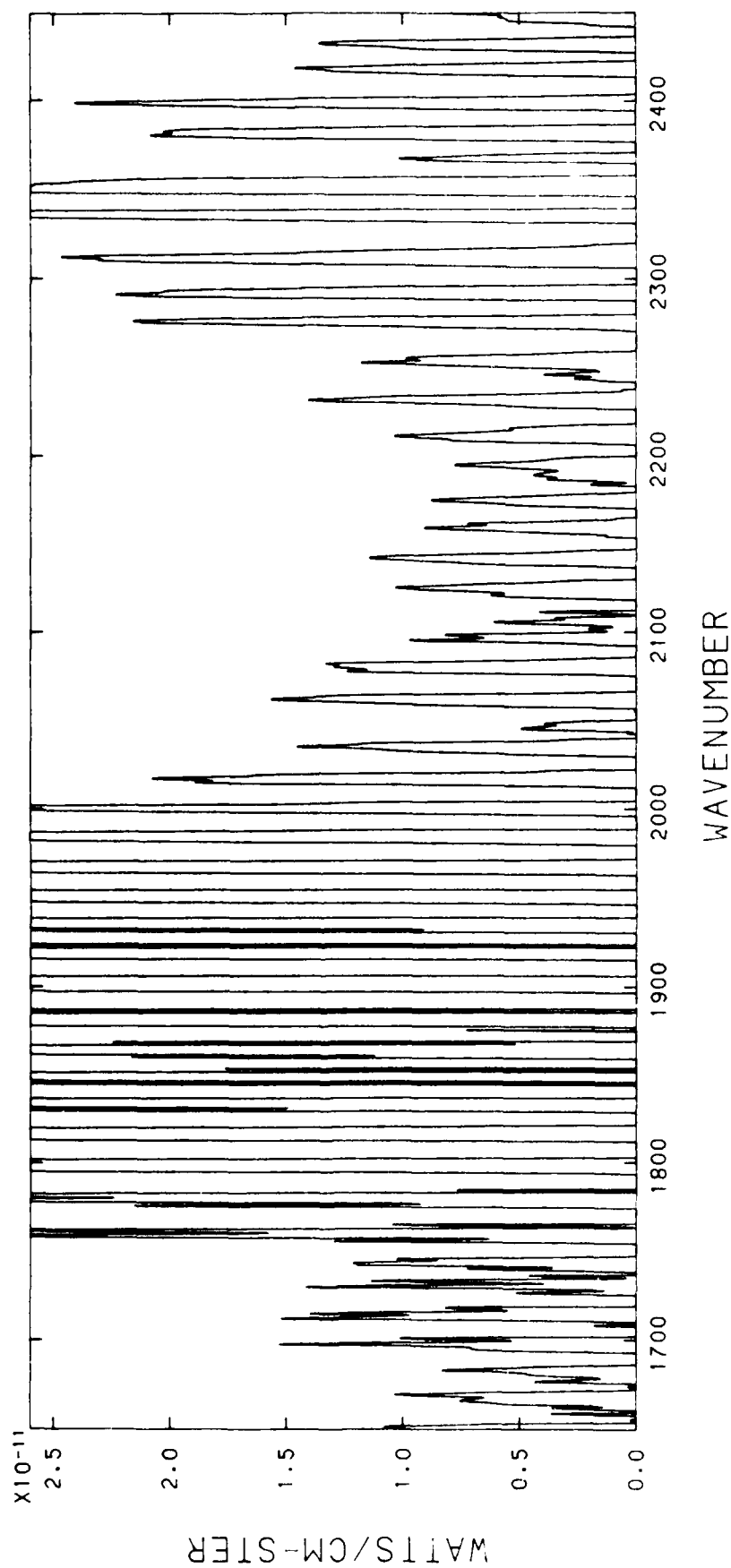


FILE 124, TIME 9:11: 3.924, ALT 98.0- 96.5 KM

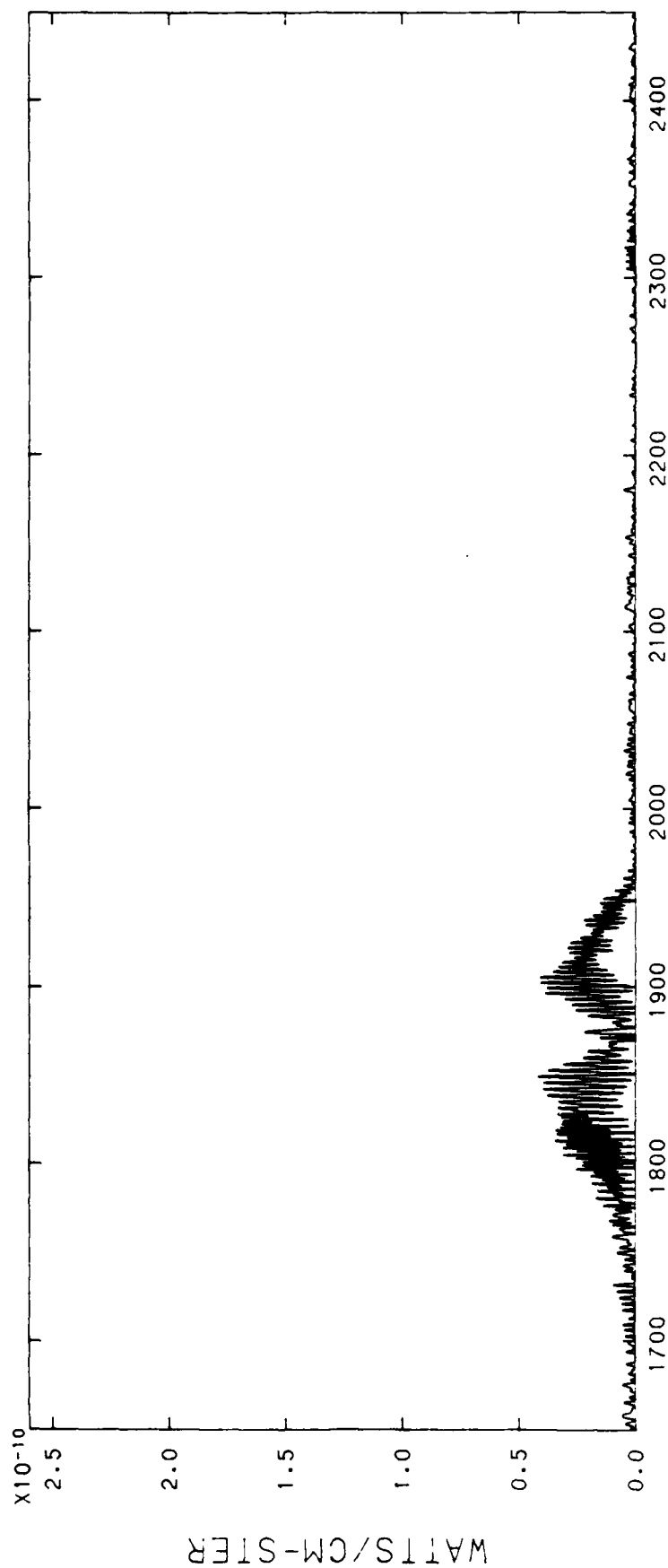


FILE 125, TIME 9:11: 5.548, ALT 96.5- 95.2 KM

24-NOV-83 00:42



FILE 125, TIME 9:11: 5.548, ALT 96.5- 95.2 KM

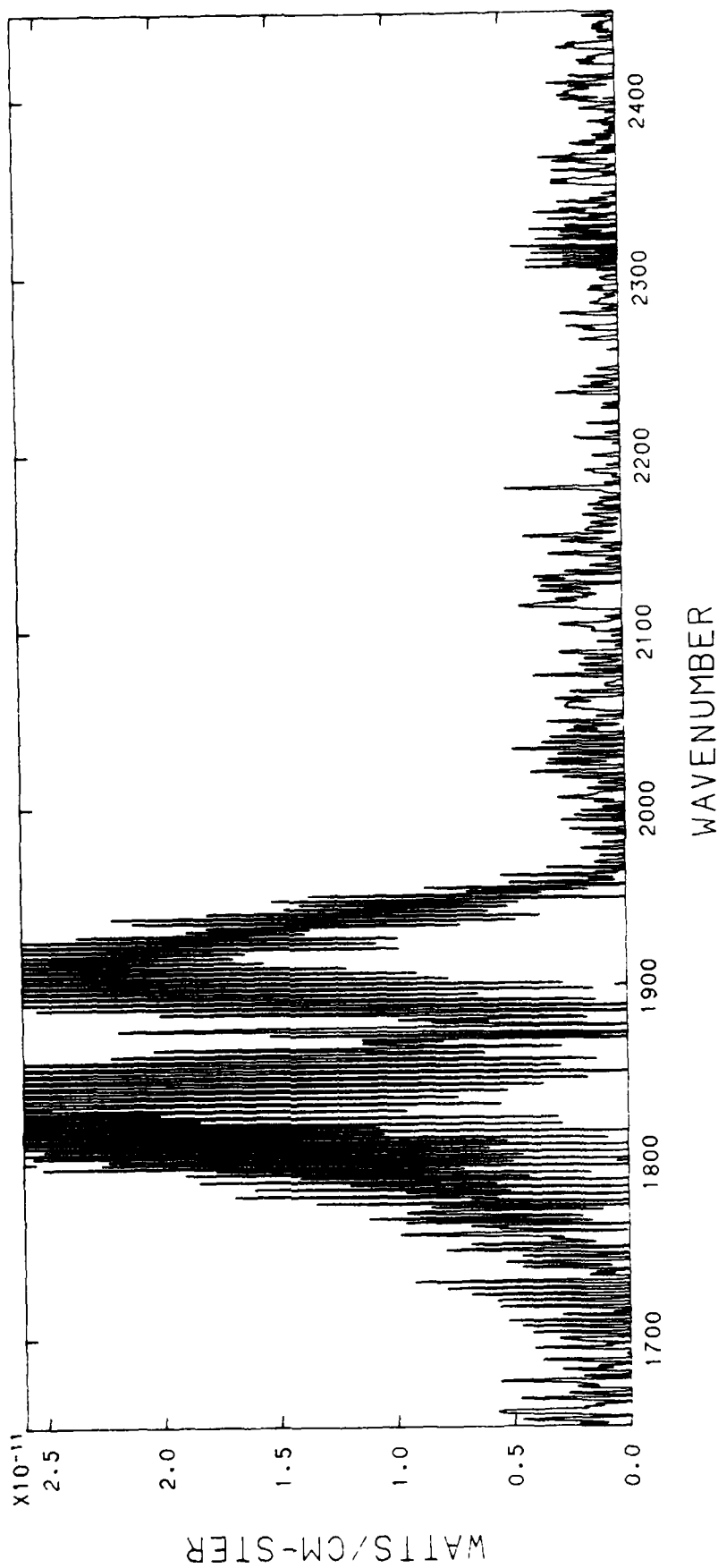


WAVENUMBER

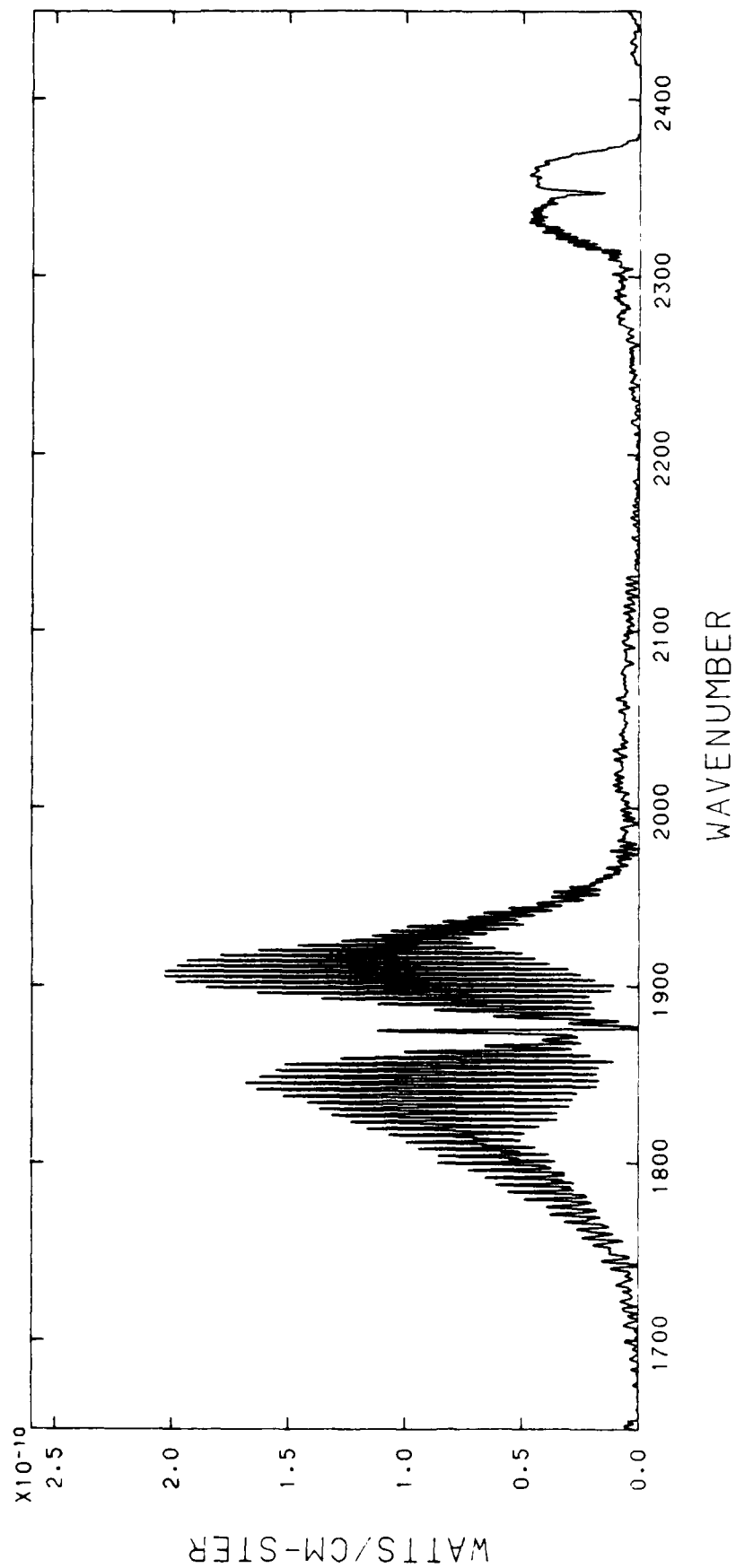
FILE 126, TIME 9:11: 7.170, ALT 95.0- 93.6 KM

24-NOV-83 00:42

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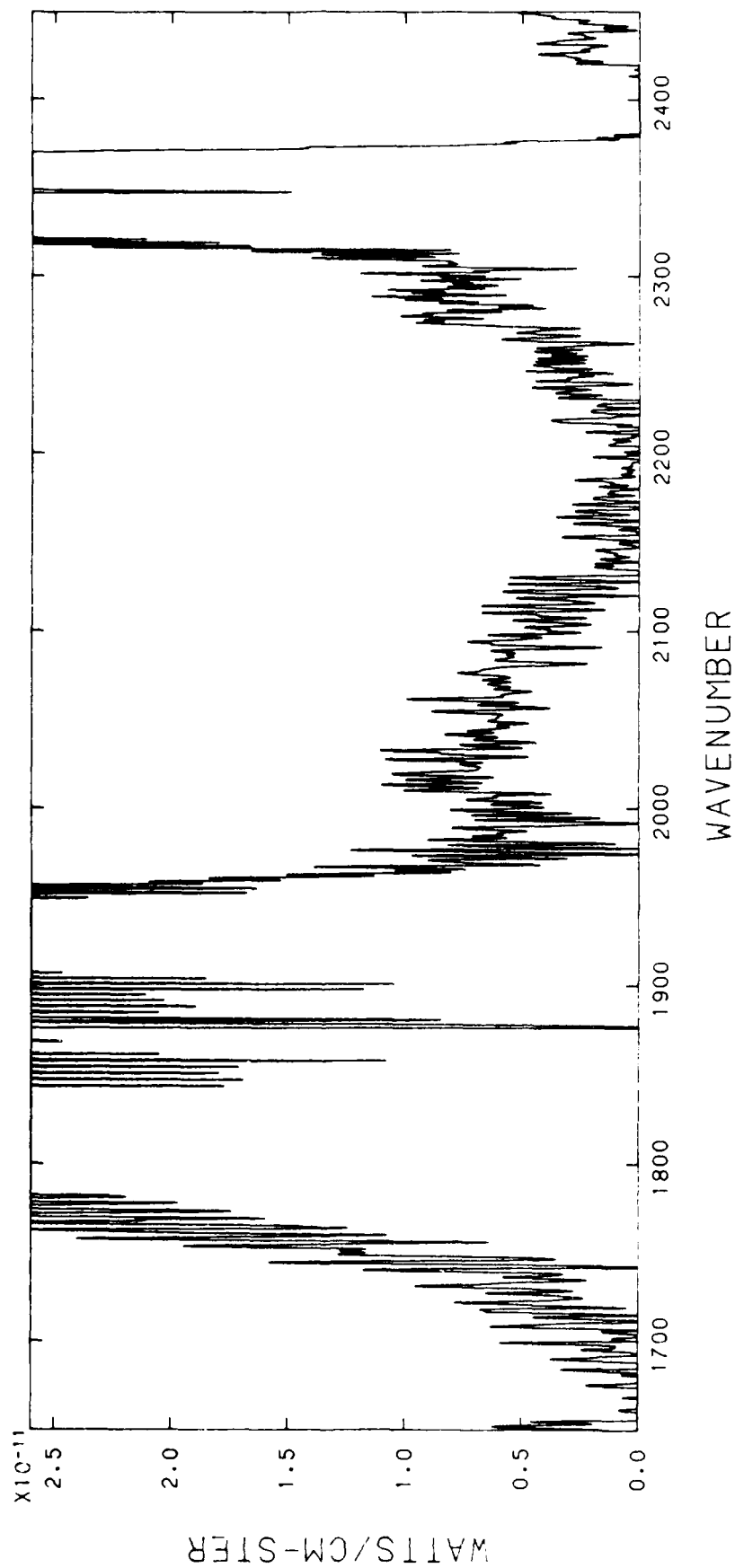


FILE 126, TIME 9:11: 7.170, ALT 95.0- 93.6 KM



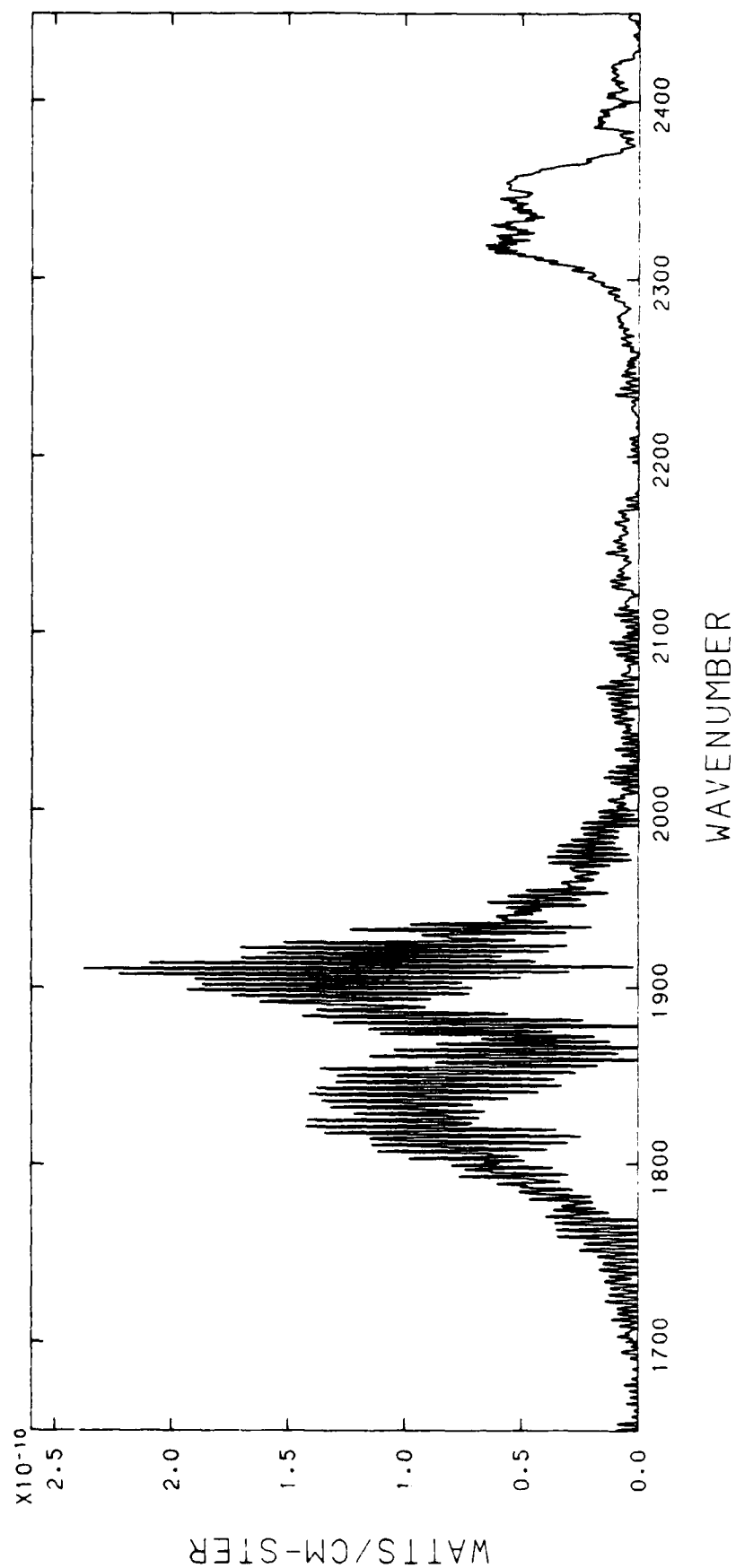
FILE 127, TIME 9:11: 8.798, ALT 93.5- 92.0 KM

24-NOV-83 00:42



FILE 127, TIME 9:11: 8.798, ALT 93.5- 92.0 KM

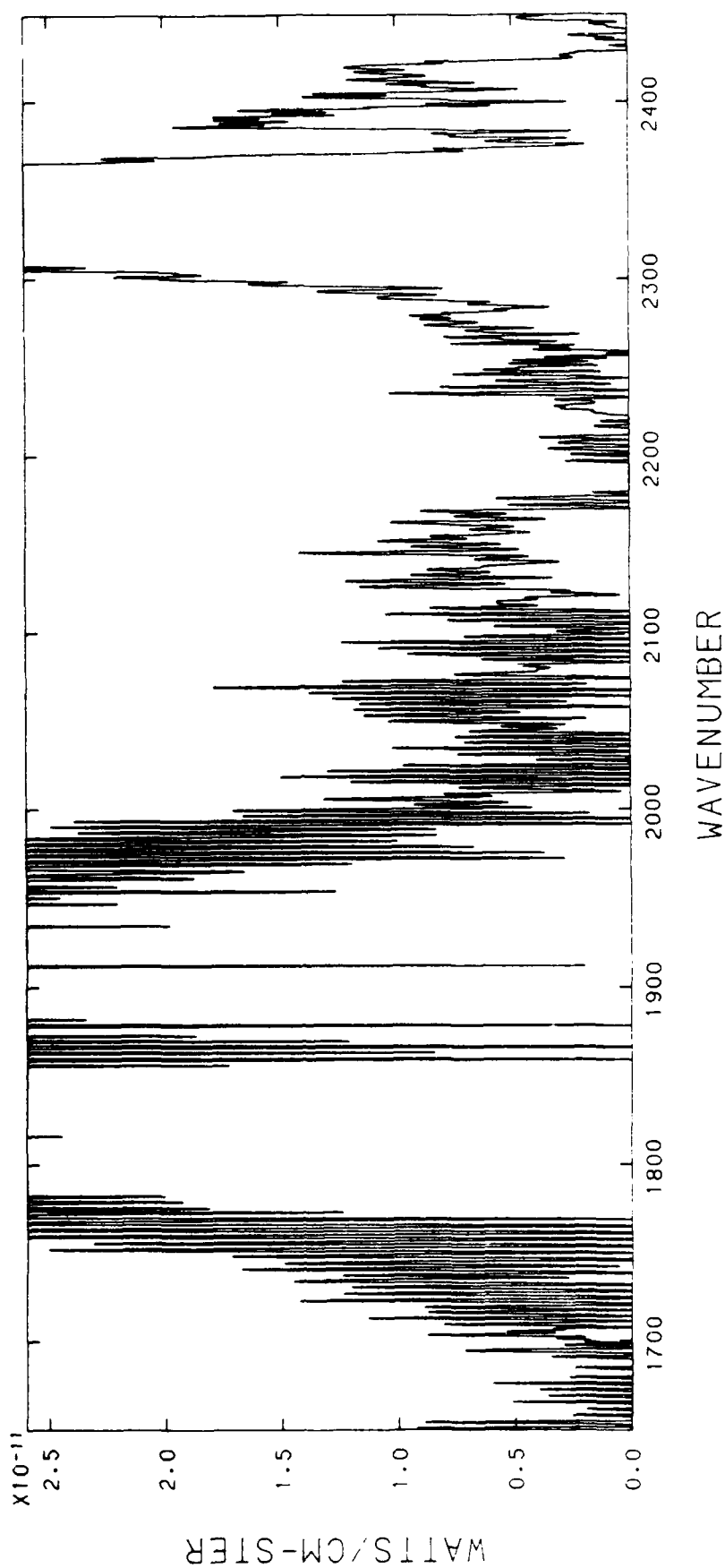
24-NOV-83 00:42



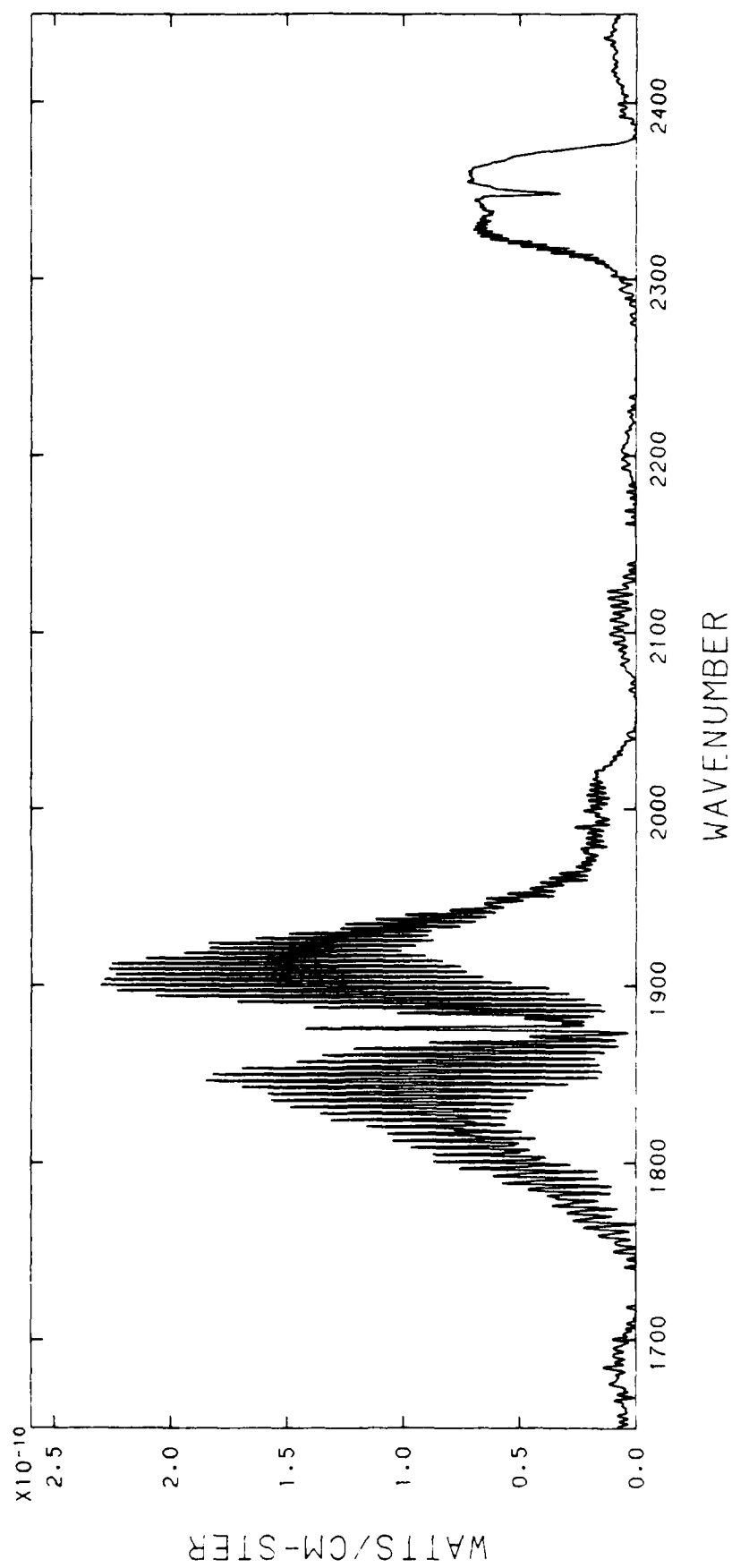
FILE 128, TIME 9:11:10.420, ALT 92.0- 90.5 KM

24-NOV-83 00:42

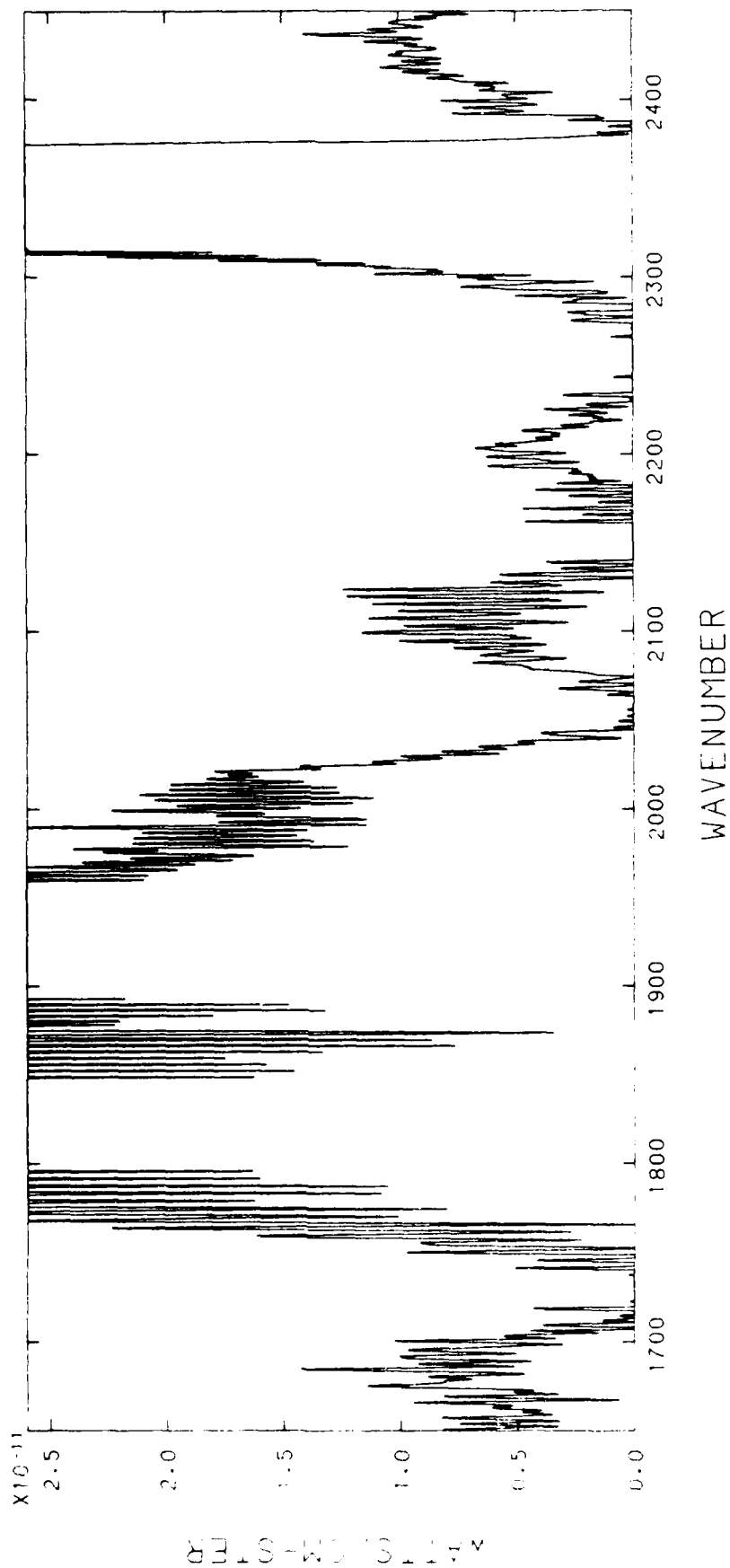




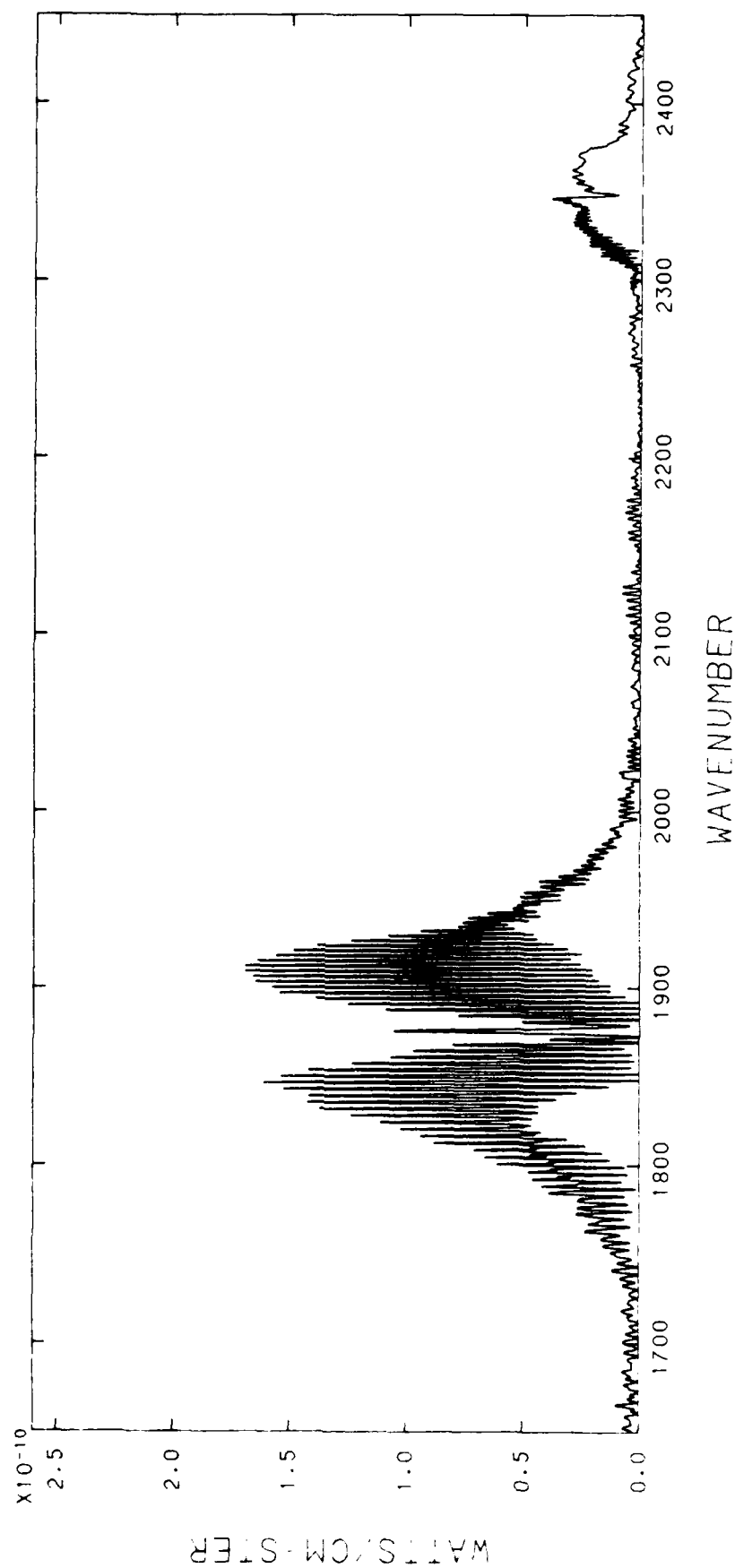
FILE 128, TIME 9:11:10.420, ALT 92.0- 90.5 KM



FILE 129, TIME 9:11:12. 46, ALT 90.5- 88.9 KM

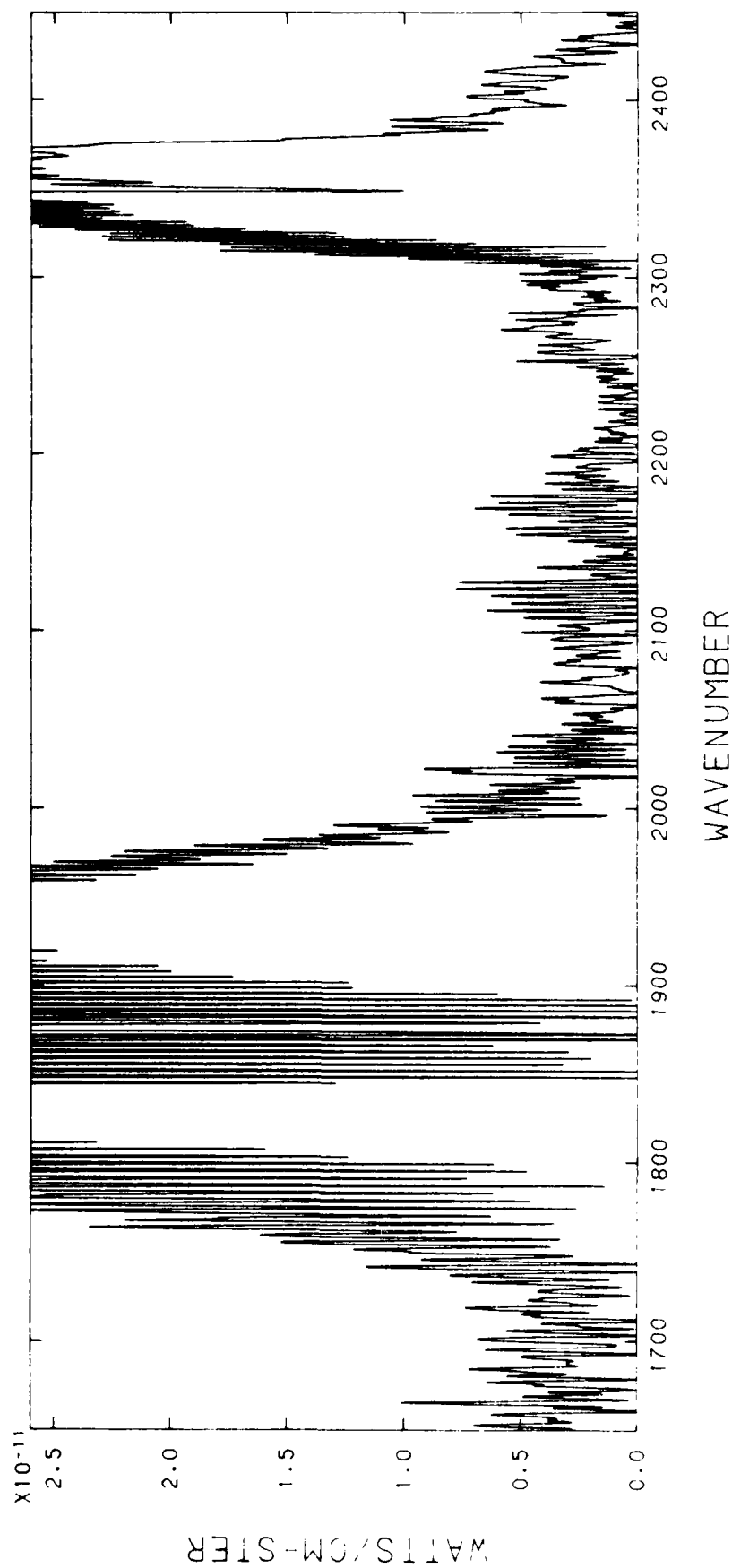


FILE 129, TIME 9:11:12. 46, ALT 90.5- 88.9 KM

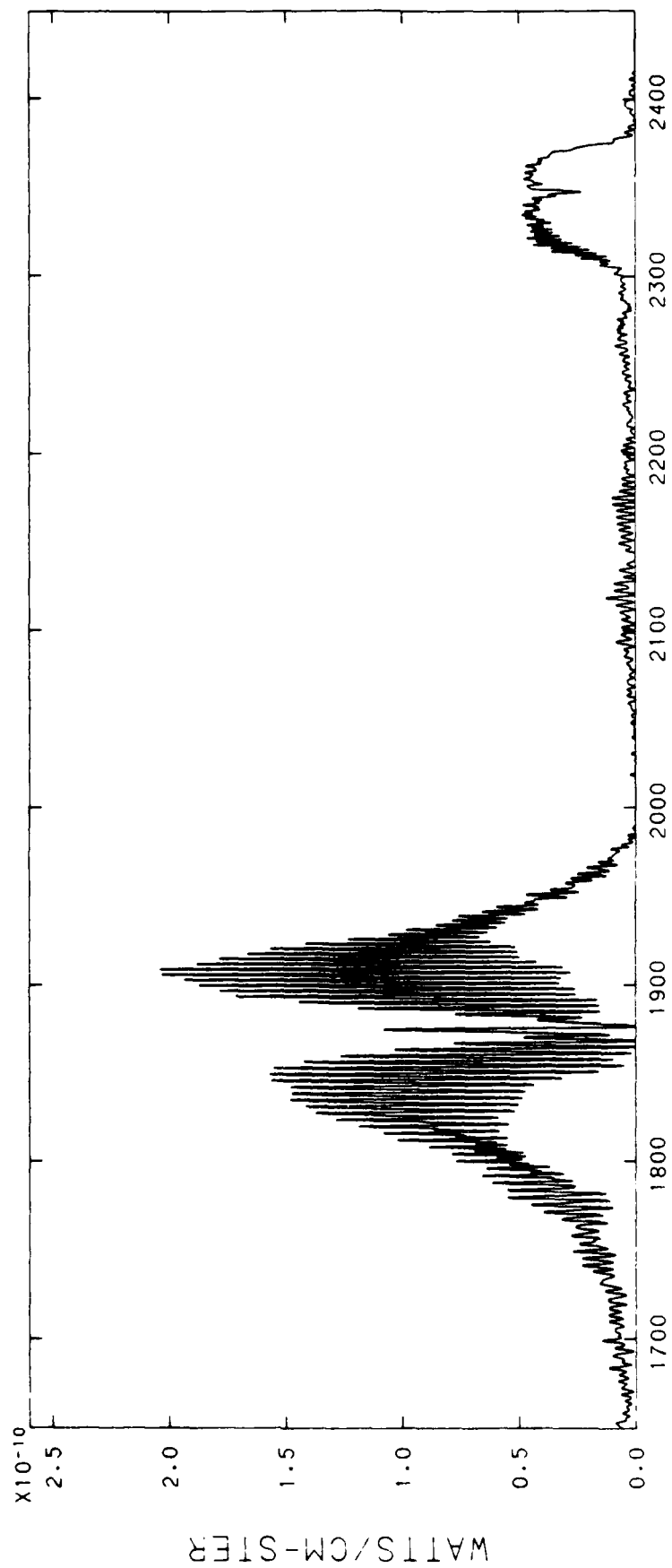


FILE 130, TIME 9:11:13.668, ALT 88.9- 87.3 KM

24-NOV-83 00:42



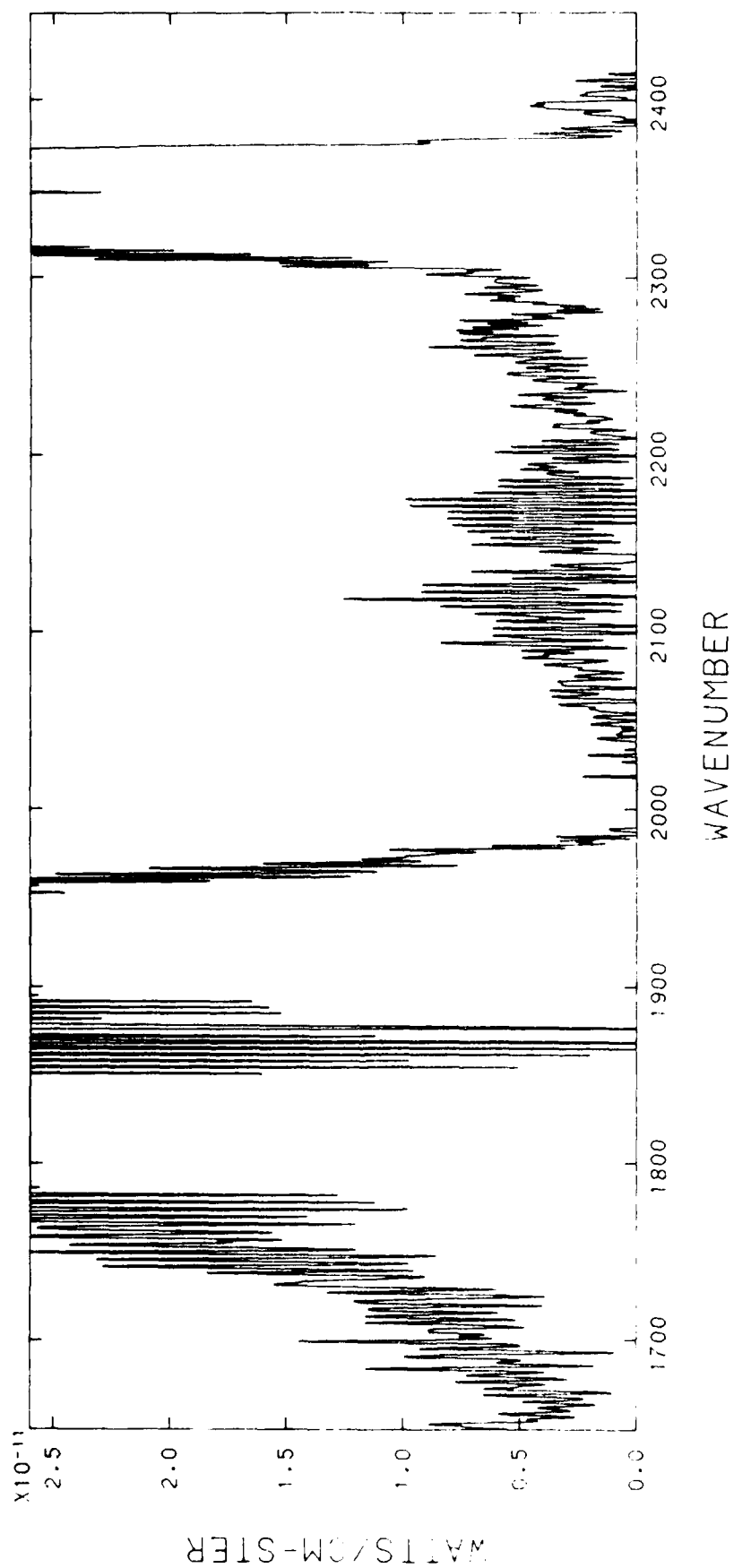
FILE 130, TIME 9:11:13.668, ALT 88.9- 87.3 KM



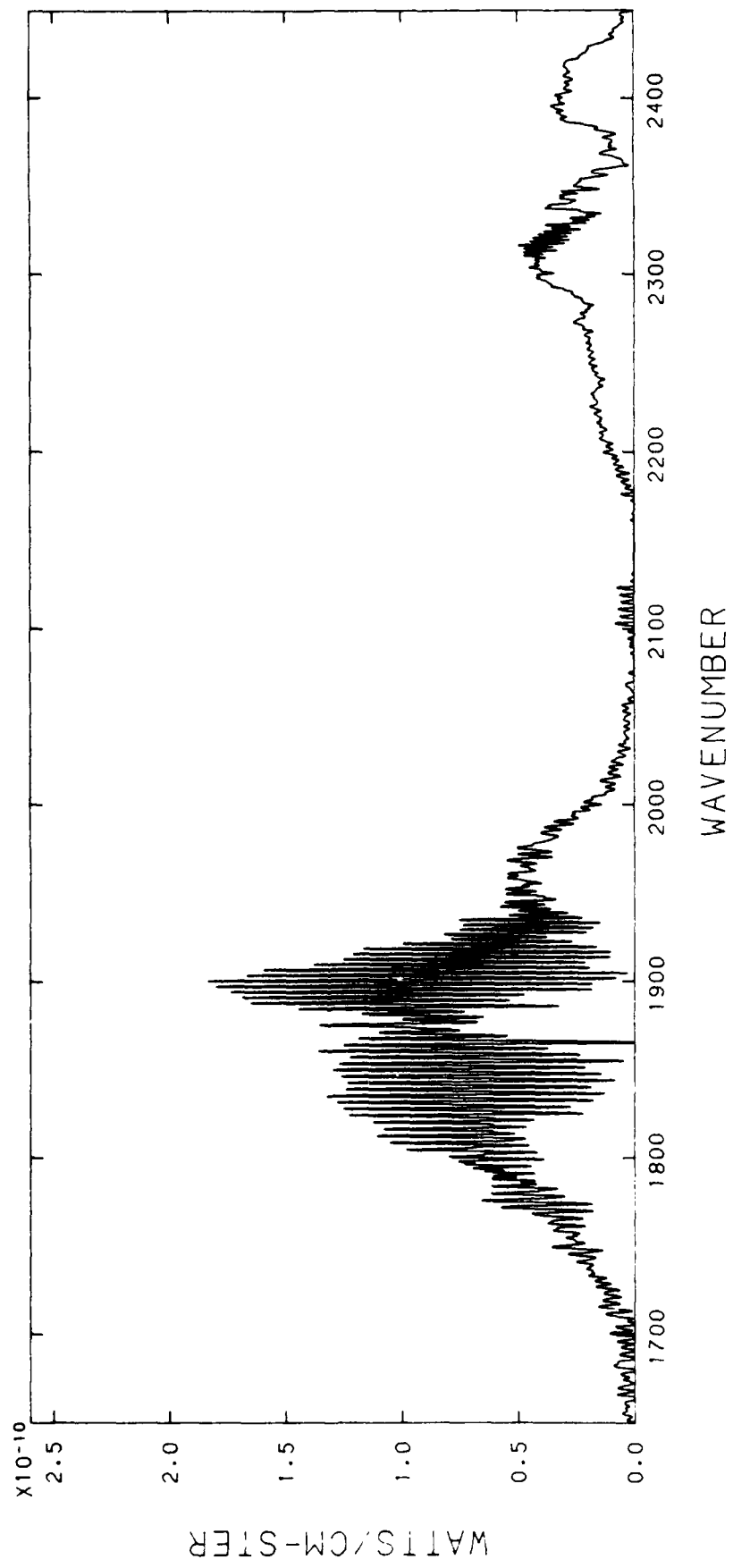
FILE 131, TIME 9:11:15.294, ALT 87.3- 85.7 KM

24-MDV-RT 00:42

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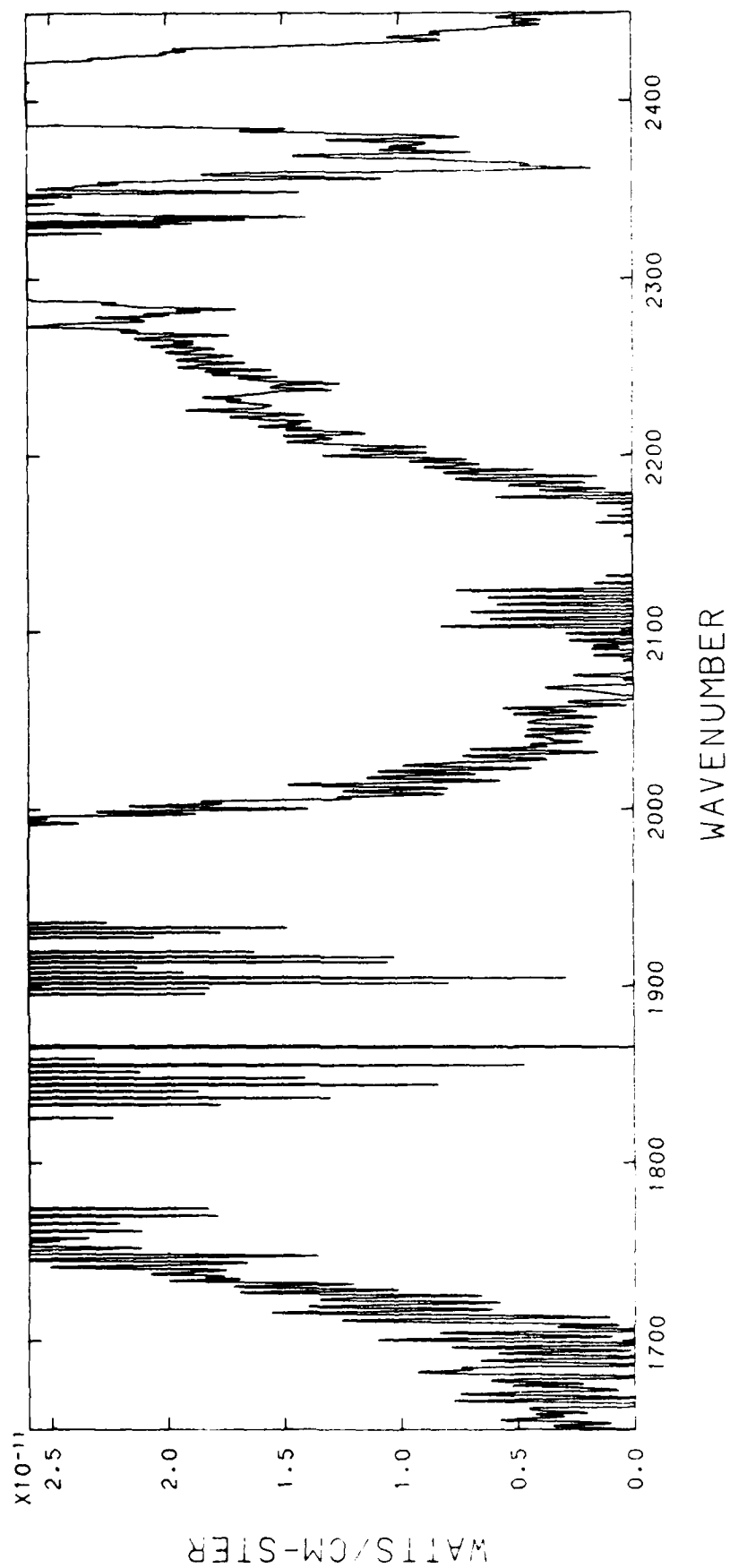


FILE 131, TIME 9:11:5.294, ALT 87.3- 85.7 KM

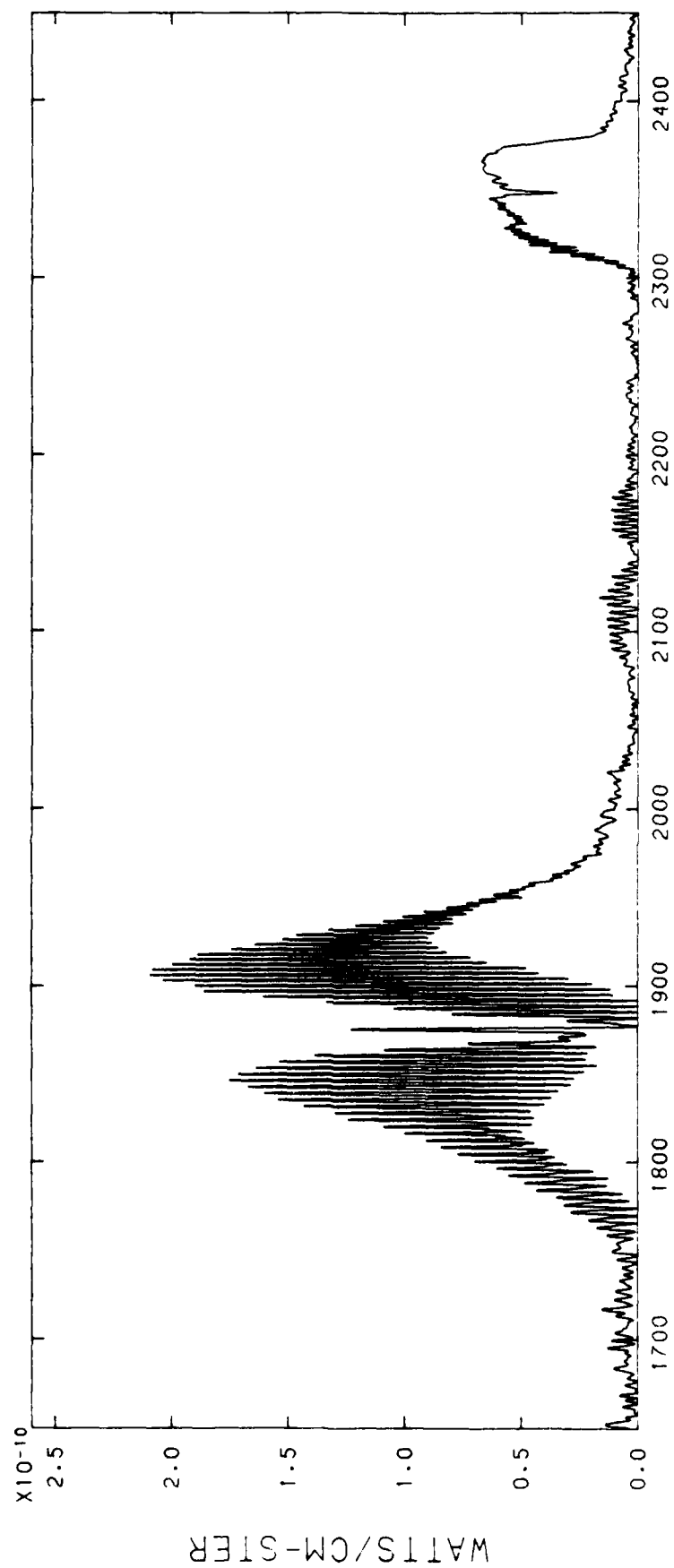


FILE 132, TIME 9:11:16.918, ALT 85.7-- 84.1 KM



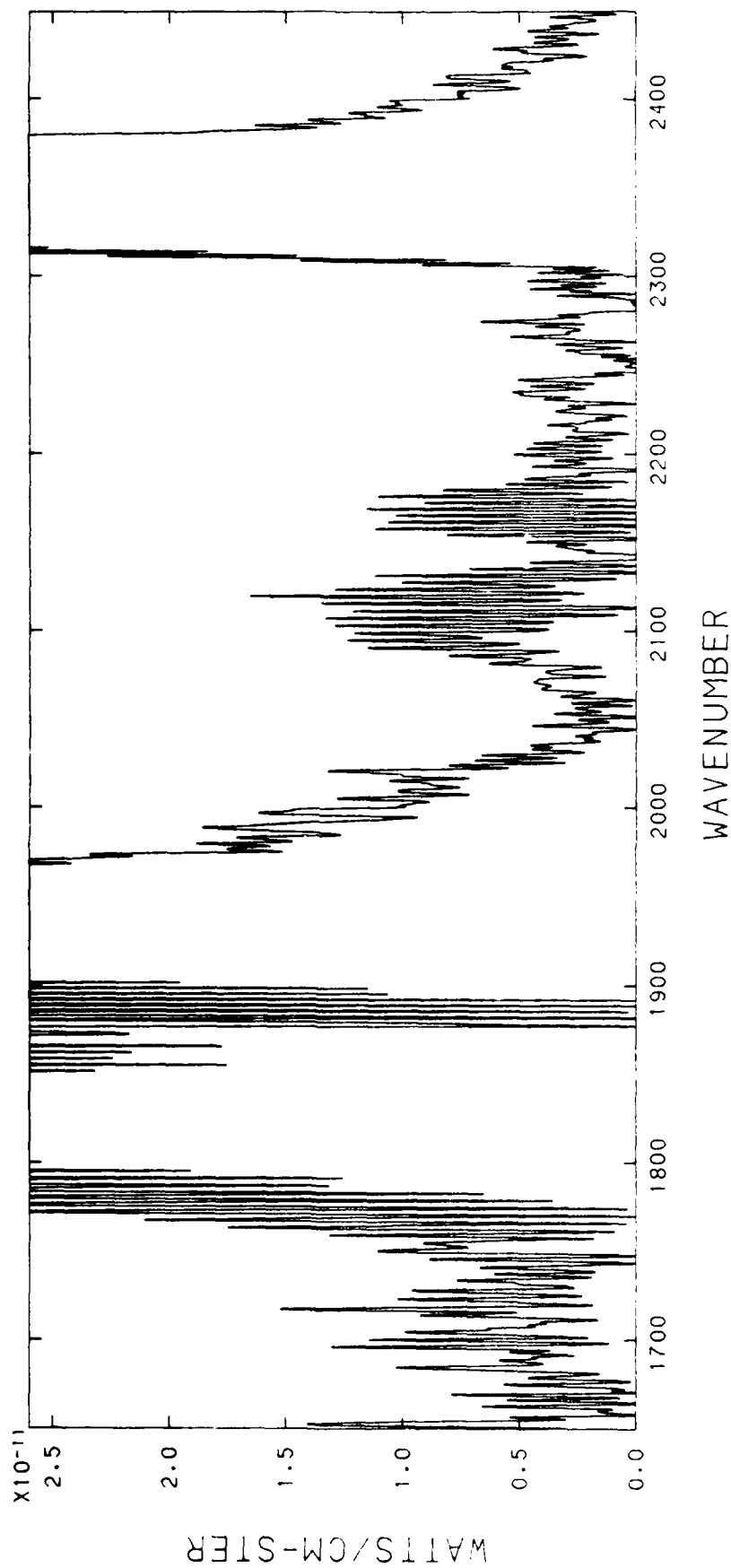


FILE 132, TIME 9:11:16.918, ALT 85.7- 84.1 KM

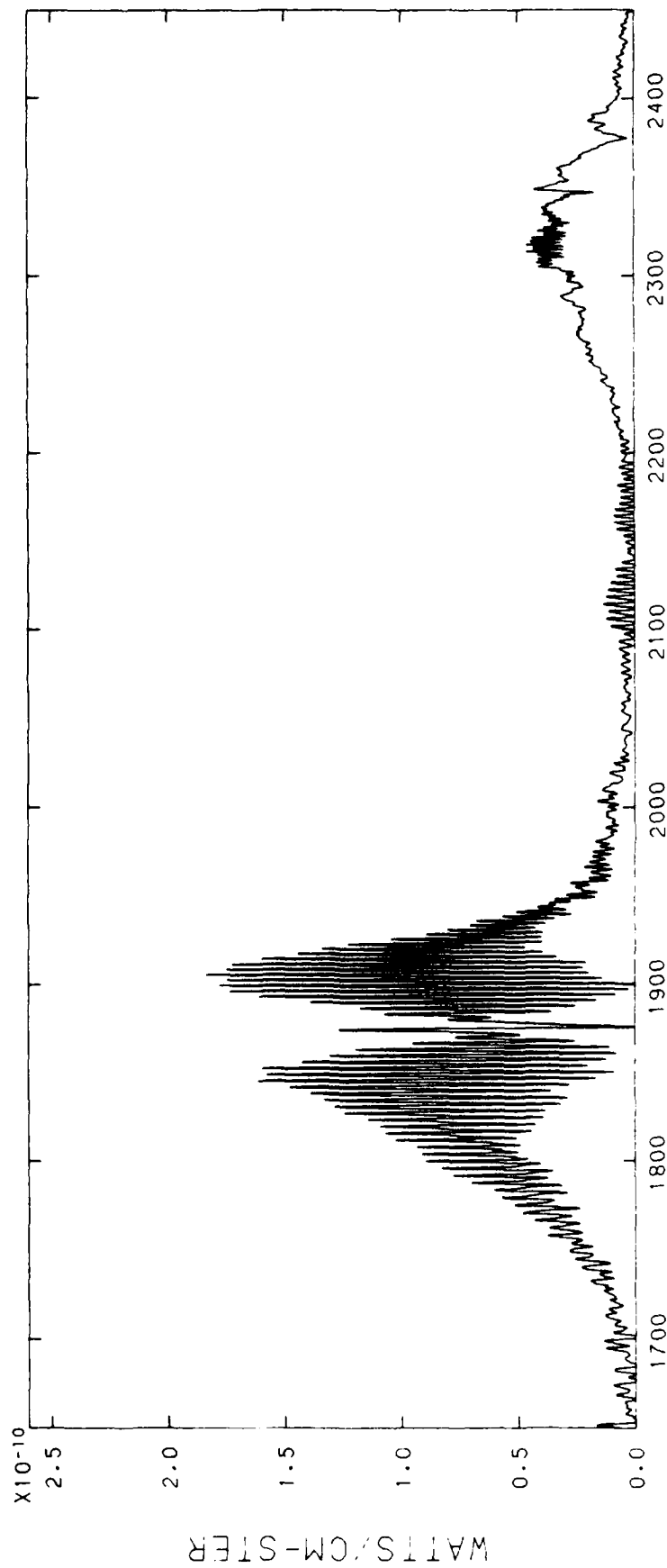


FILE 133, TIME 9:11:18.546, ALT 84.1 - 82.4 KM

24-MDV-83 00:42



FILE 133, TIME 9:11:18.546, ALT 84.1 - 82.4 KM

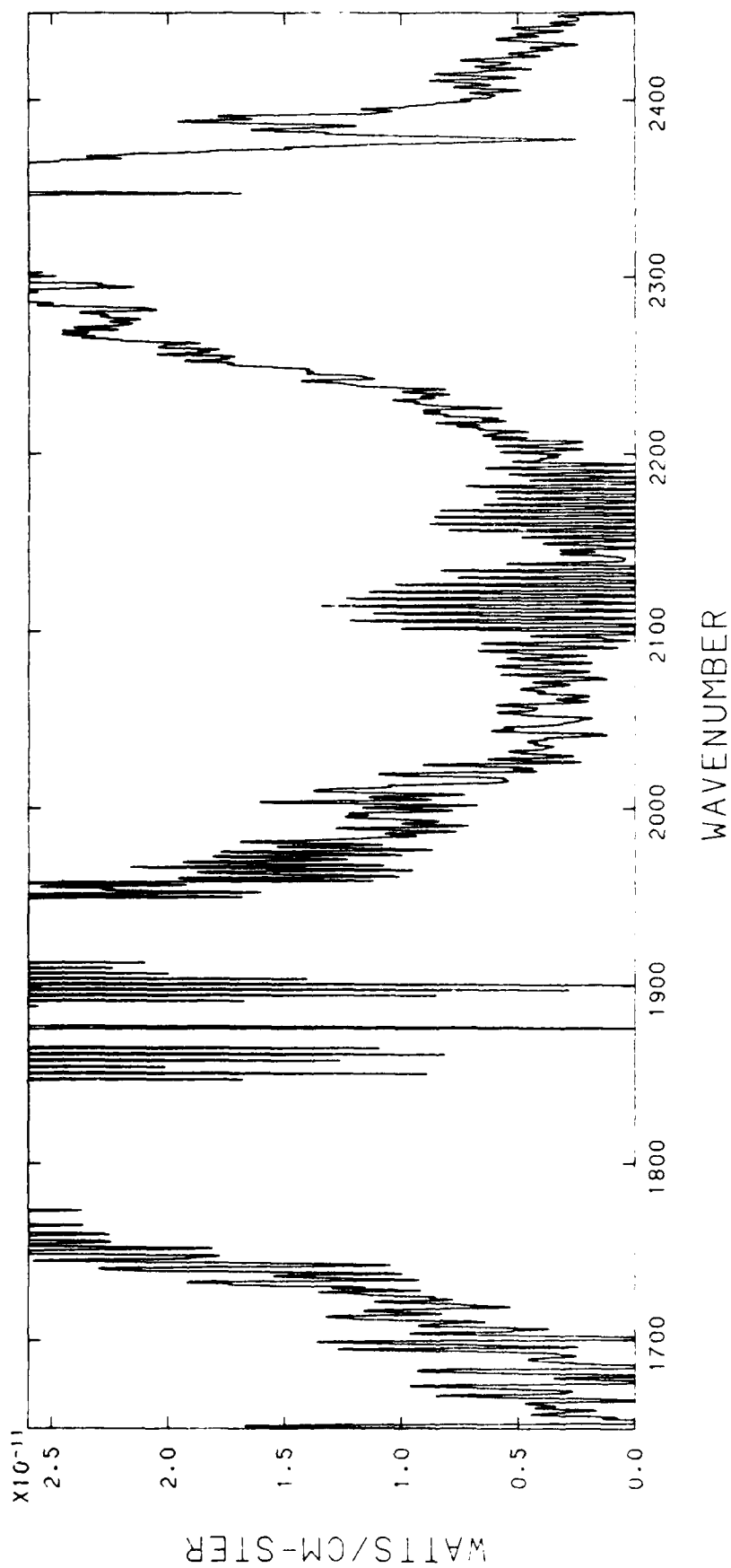


WAVENUMBER

FILE 134, TIME 9:11:20.168, ALT 82.4- 80.7 KM

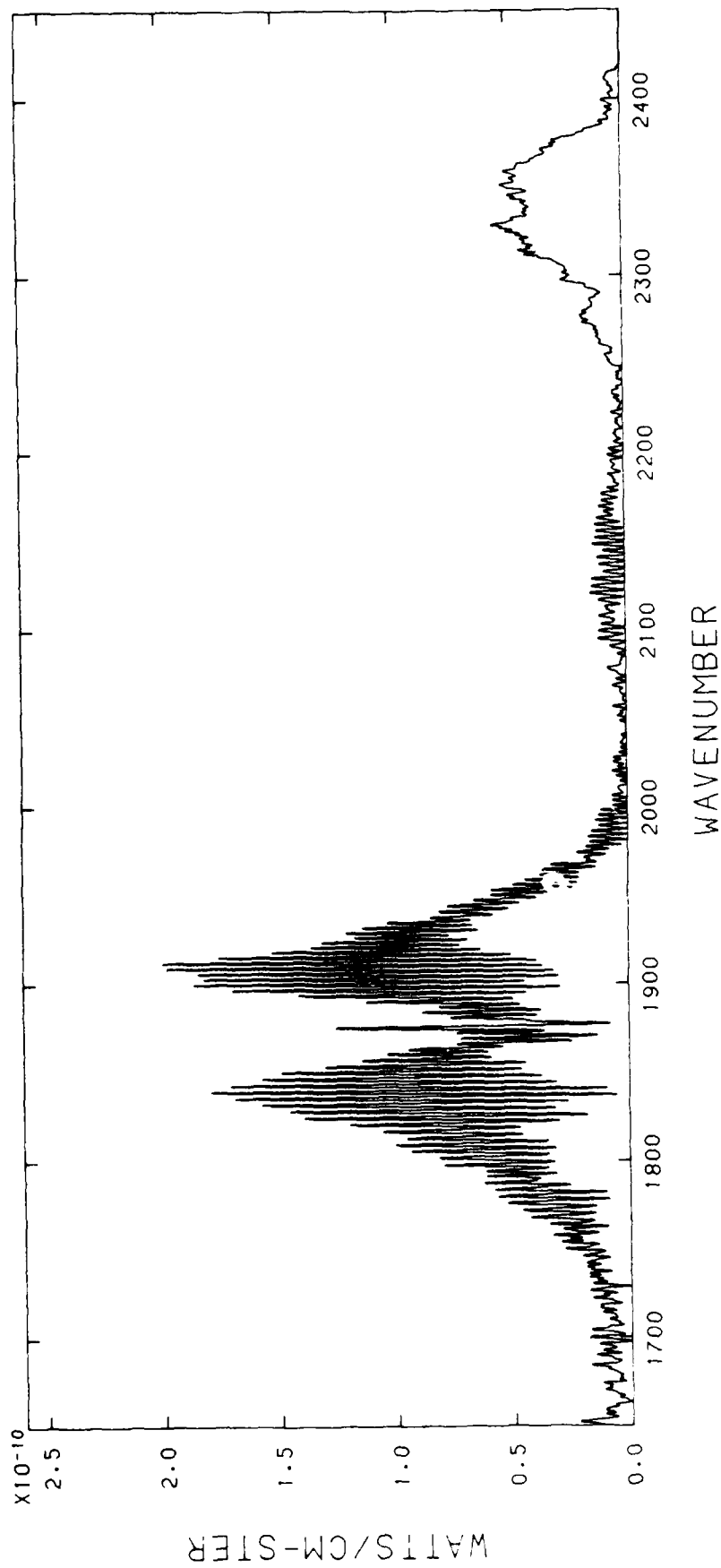
24-NOV-83 00:42

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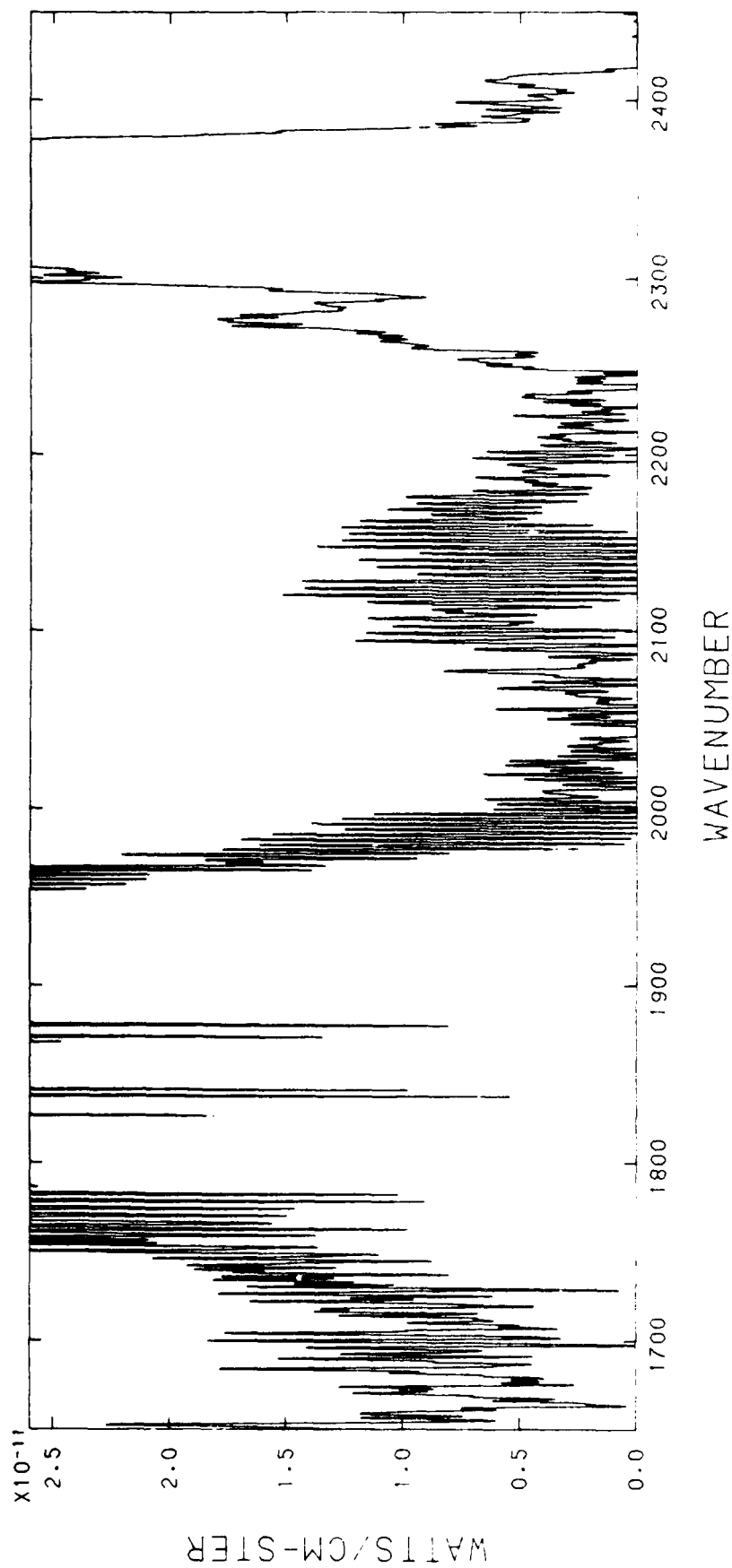


FILE 134, TIME 9:11:20.168, ALT 82.4- 80.7 KM

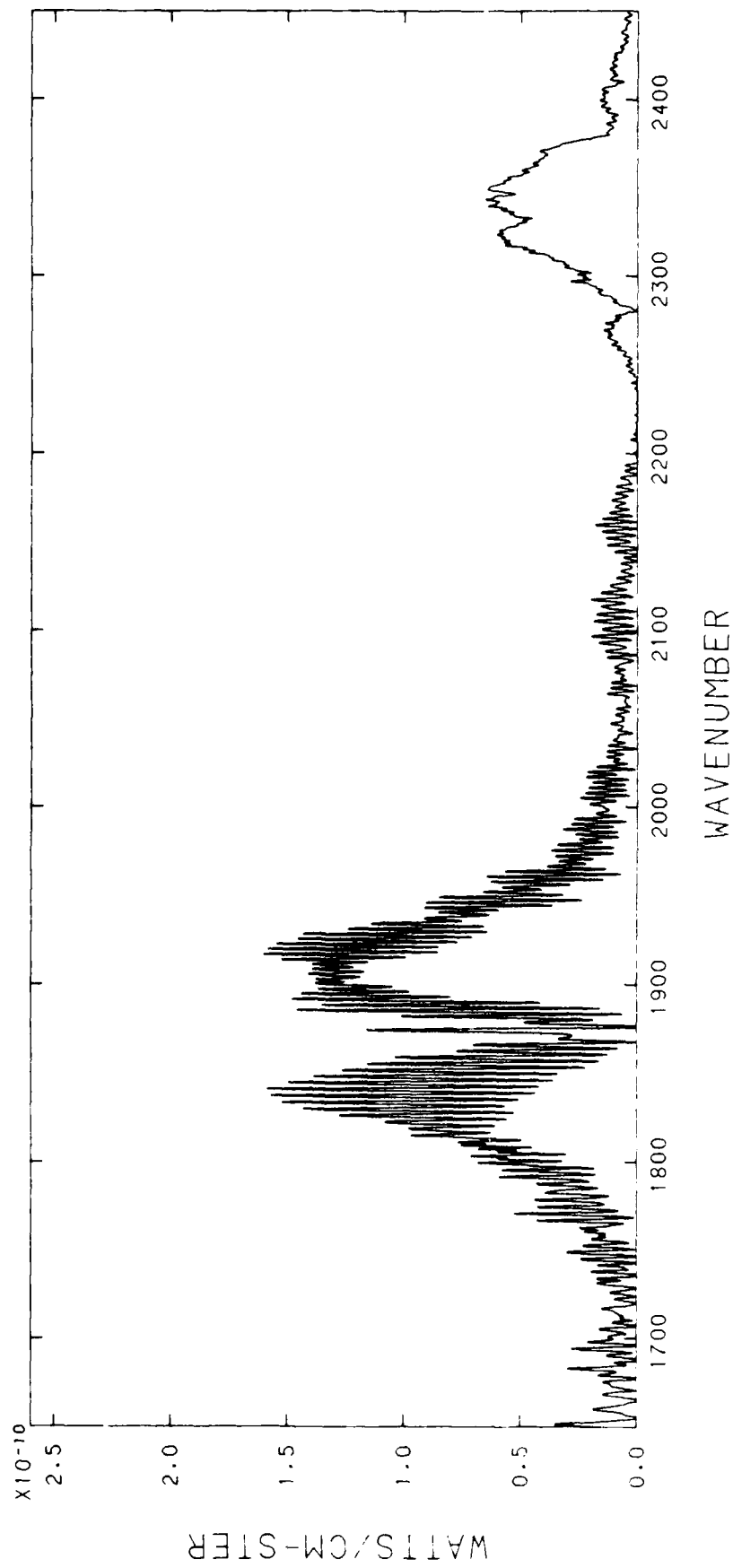
24-NOV-83 00:42



FILE 135, TIME 9:11:21.796, ALT 80.7- 79.0 KM



FILE 135, TIME 9:11:21.796, ALT 80.7- 79.0 KM



FILE 136, TIME 9:11:23.418, ALT 79.0- 77.2 KM

24-NOV-83 00:43



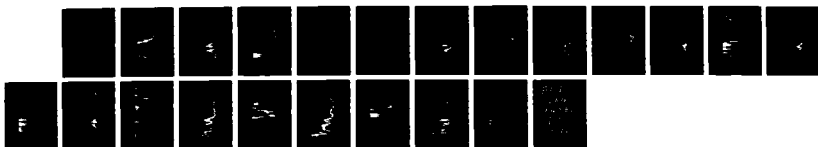
AD-A197 181

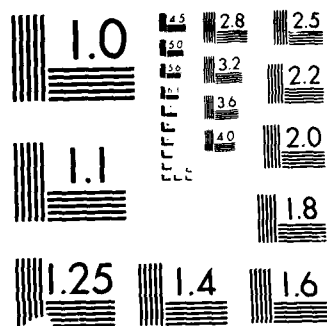
CATALOG OF HIGH RESOLUTION INFRARED SPECTRA:  
FIELD-WIDENED INTERFEROMETER. (U) NOTRE DAME UNIV IN  
DEPT OF CIVIL ENGINEERING R H HAYCOCK ET AL. 26 JUN 85

4/4

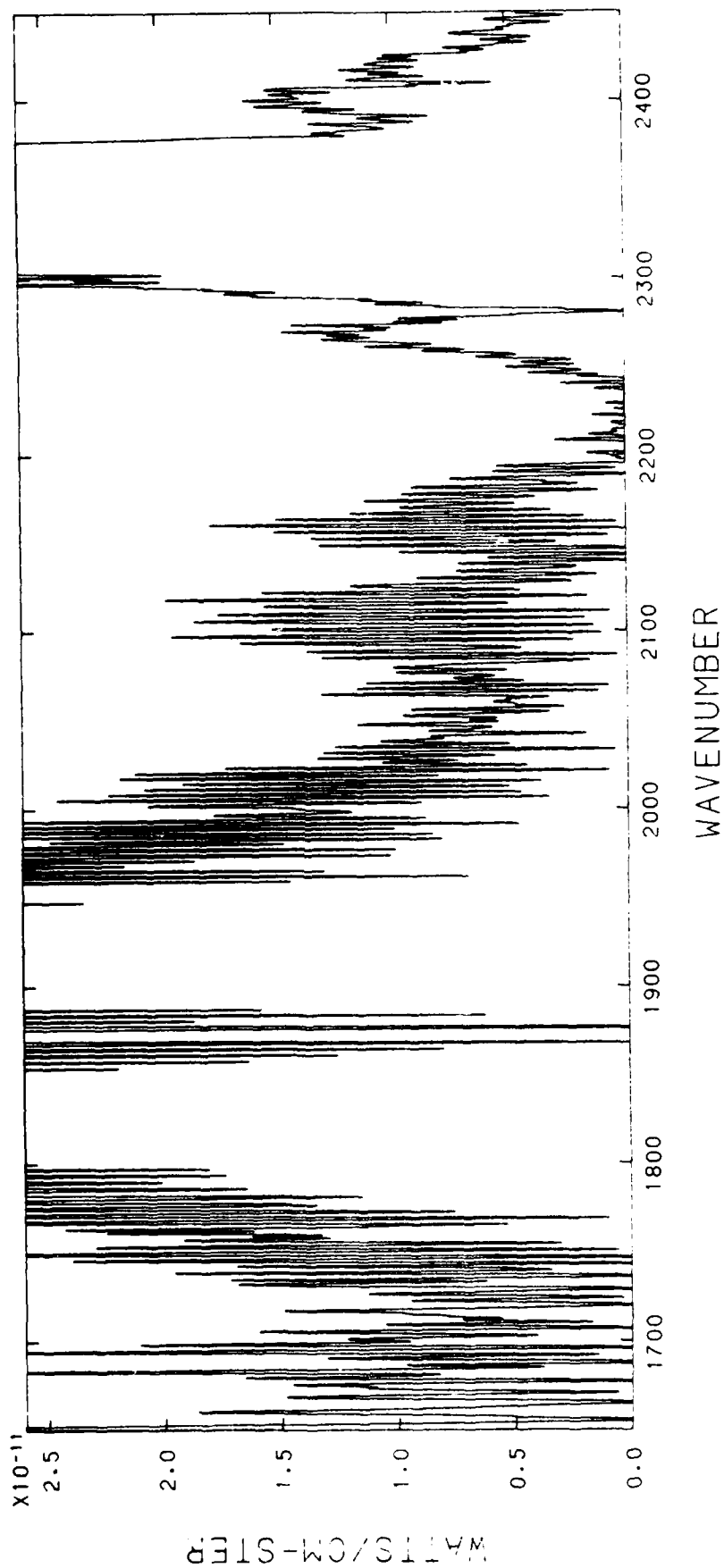
UNCLASSIFIED

SDL/85-045 AFGL-TR-85-0161 F19628-83-C-0056 F/G 17/5.1 NL

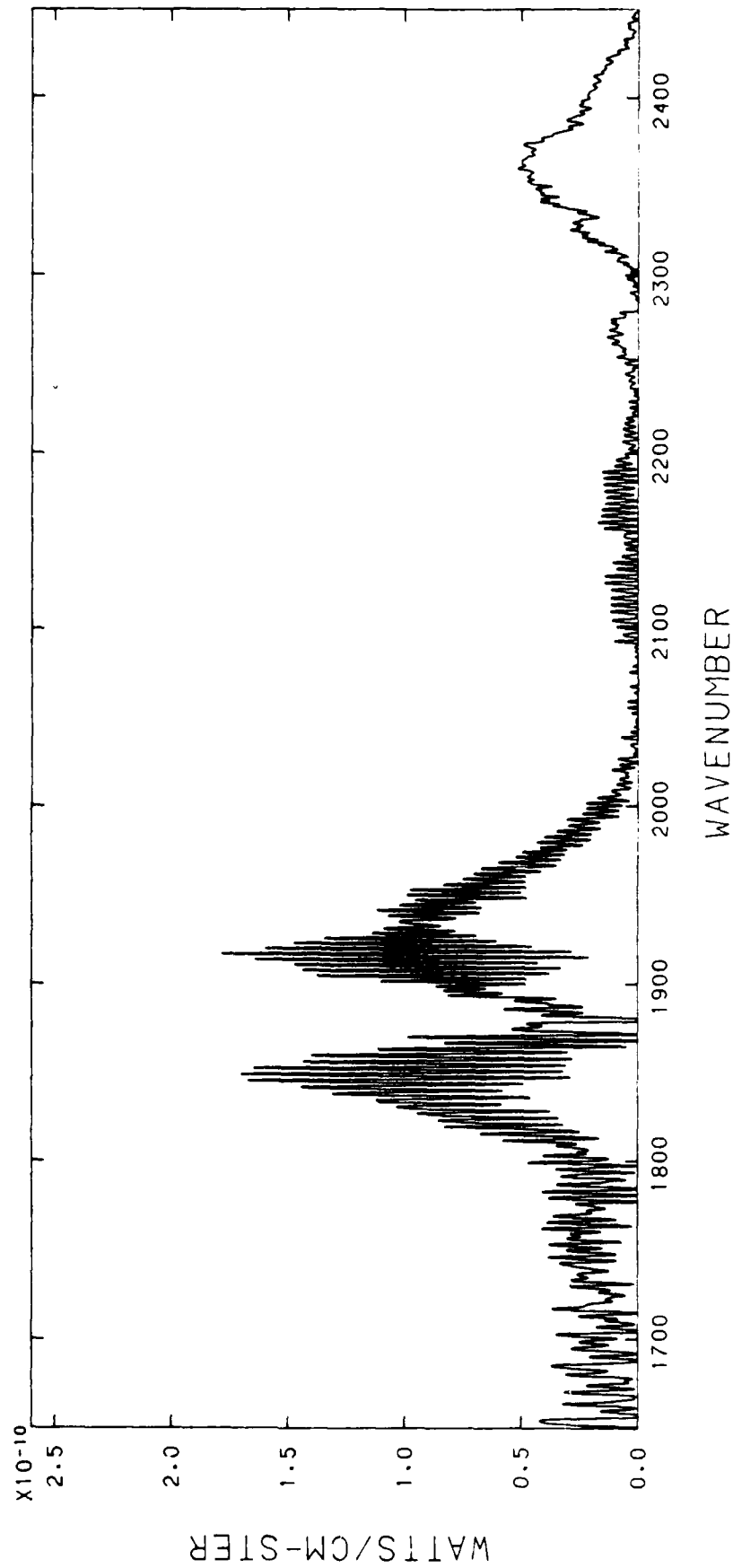




UTION TEST CHART

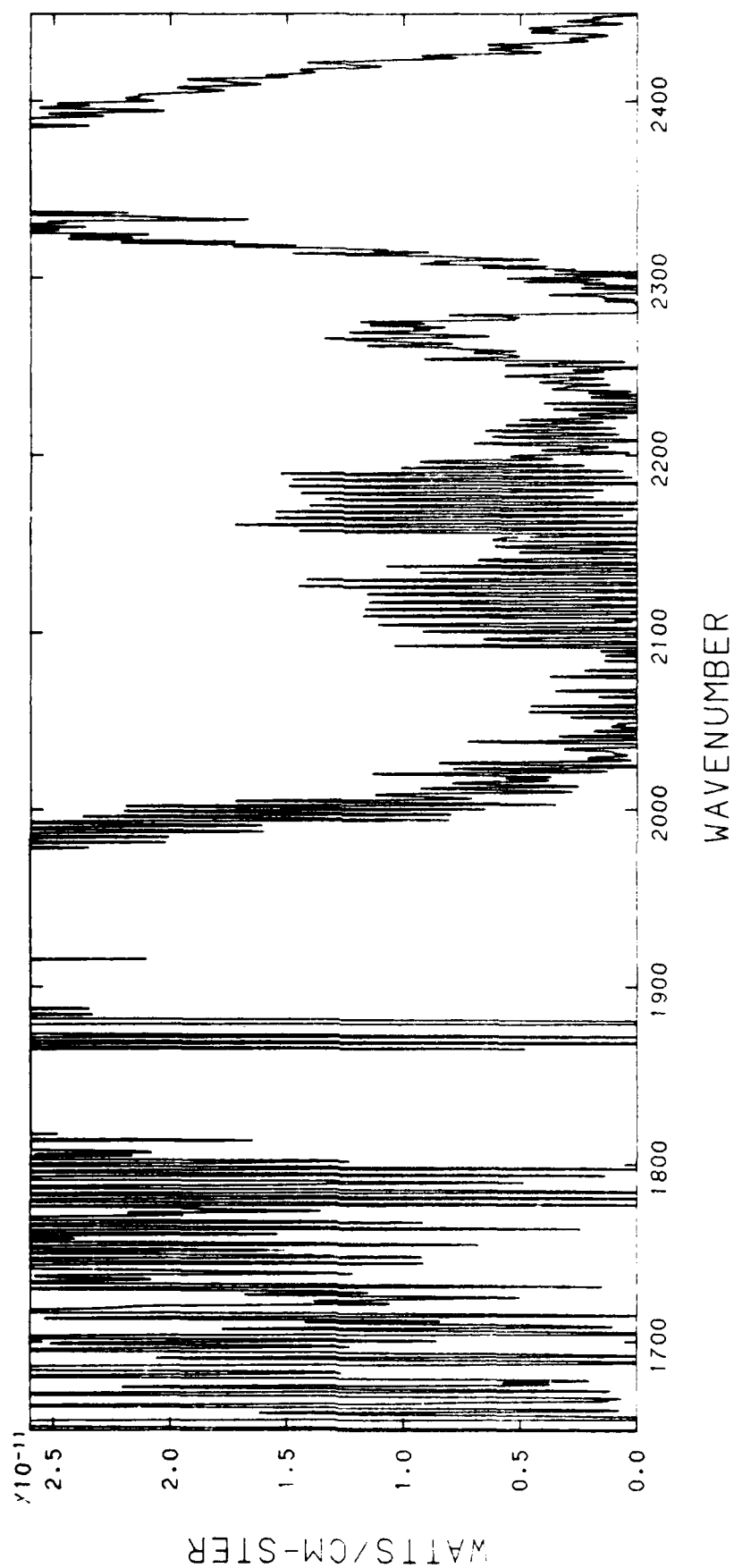


FILE 136, TIME 9:11:23.418, ALT 79.0- 77.2 KM



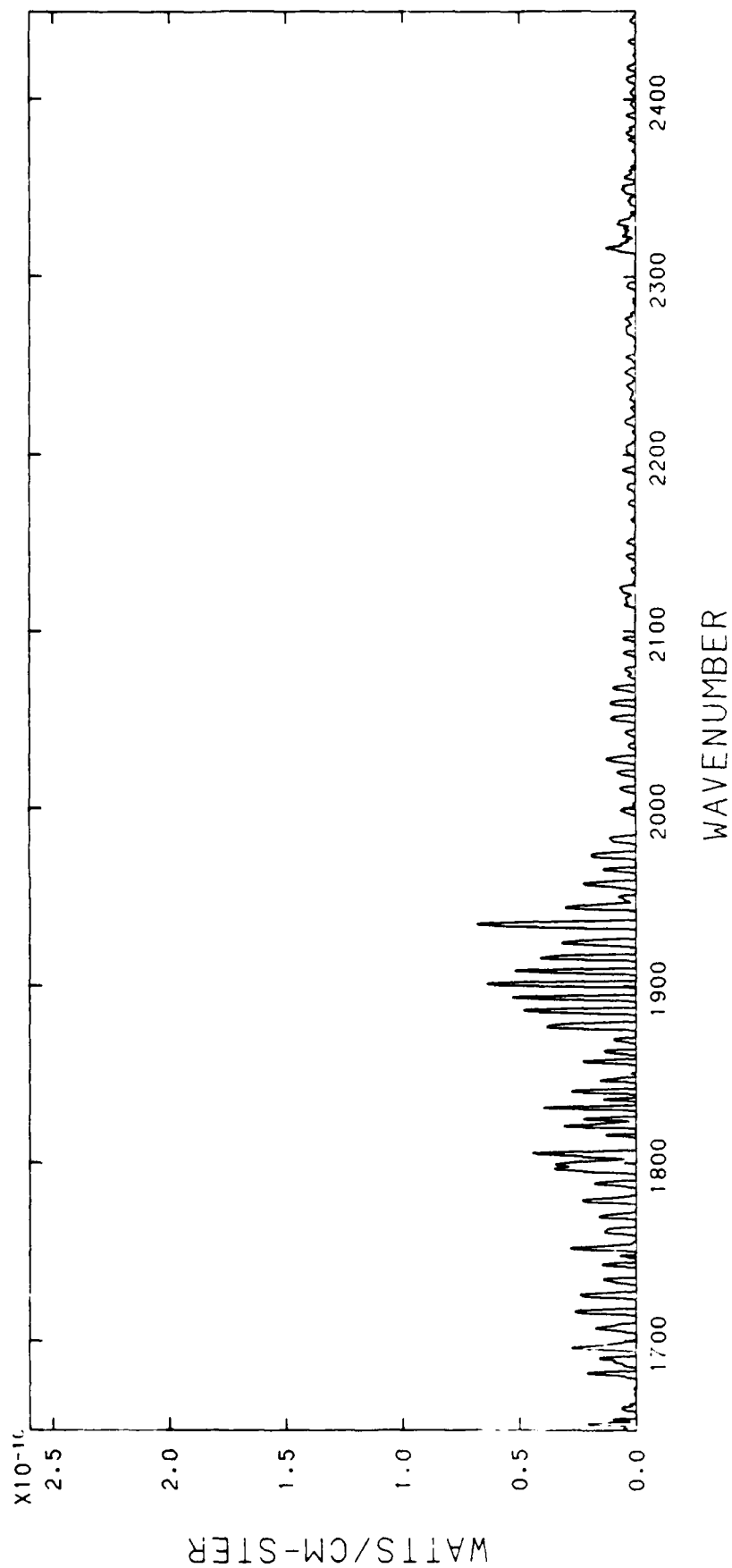
FILE 137, TIME 9:11:25. 44, ALT 77.2- 75.5 KM

24-NOV 83 00:43

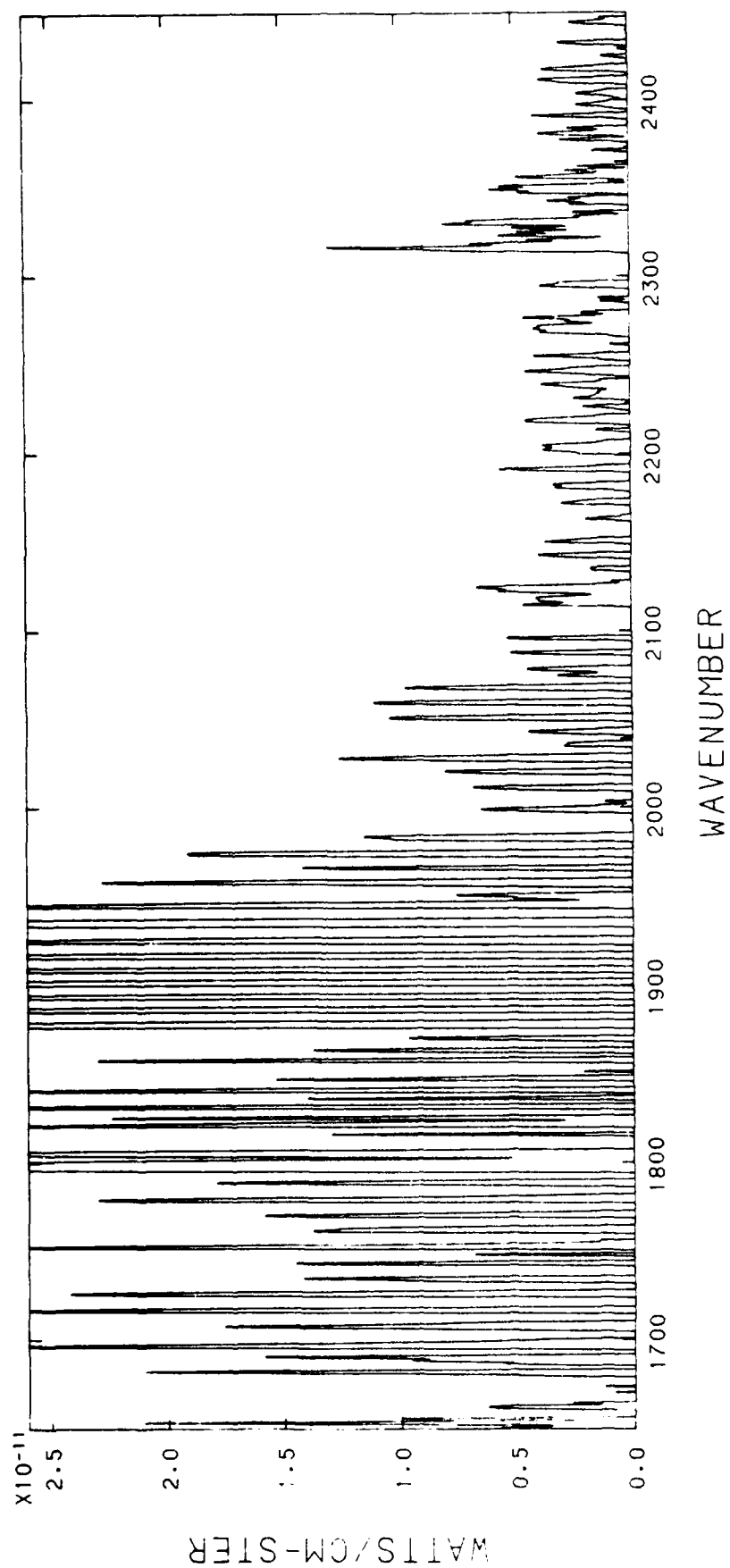


FILE 137, TIME 9:11:25. 44, ALT 77.2- 75.5 KM

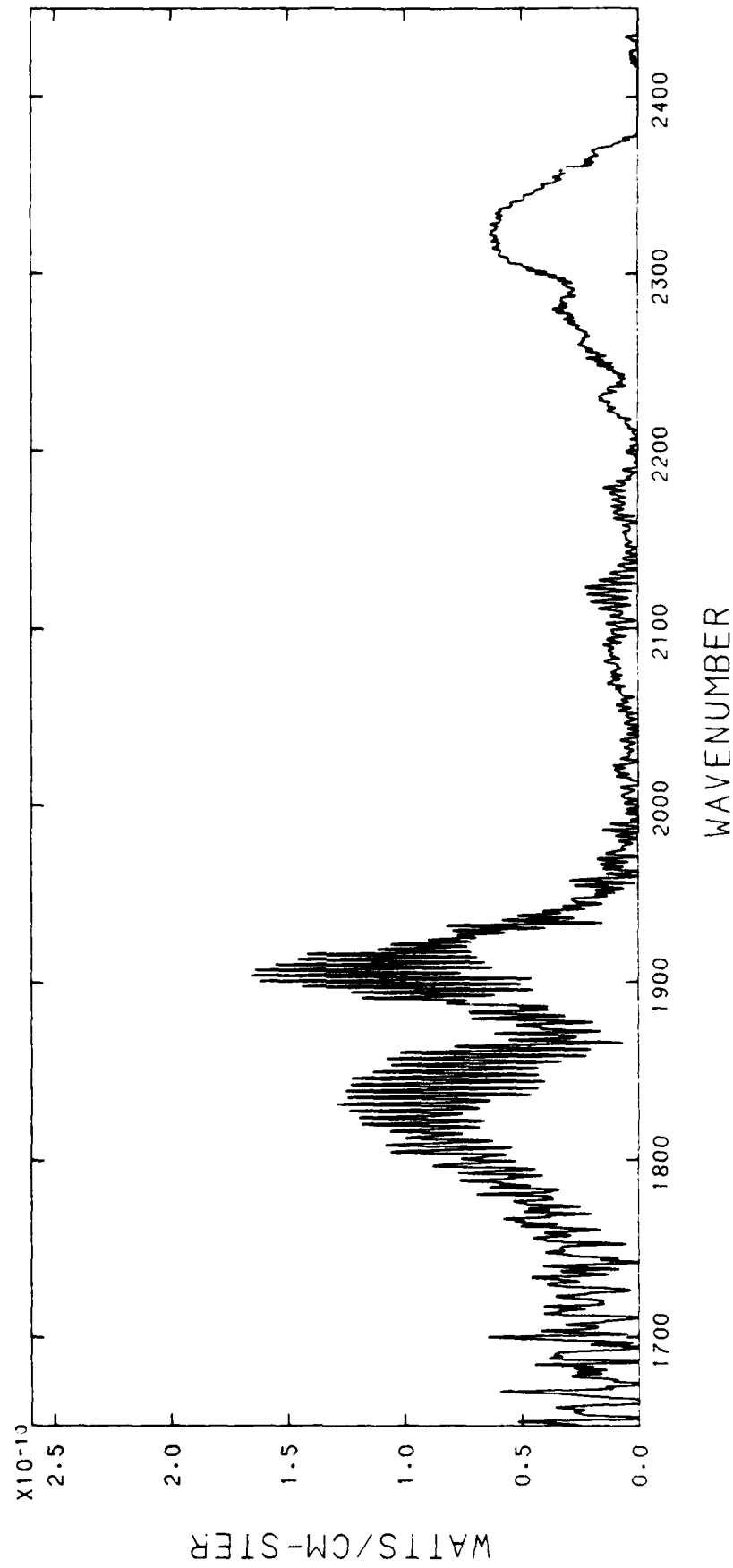
24-MOV-83 00143



FILE 138, TIME 9:11:26.662, ALT 75.5- 73.7 KM



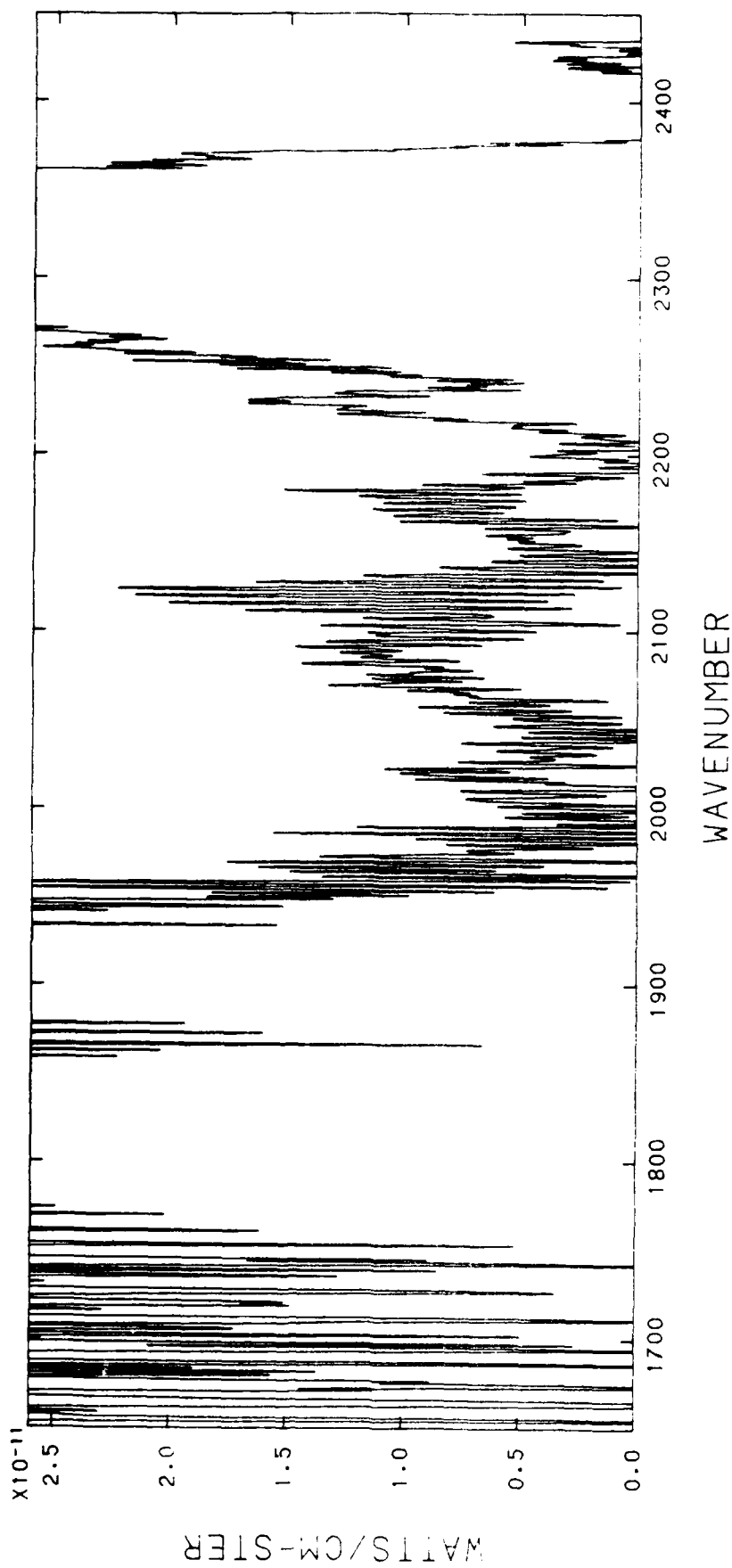
FILE 138, TIME 9:11:26.662, ALT 75.5- 73.7 KM



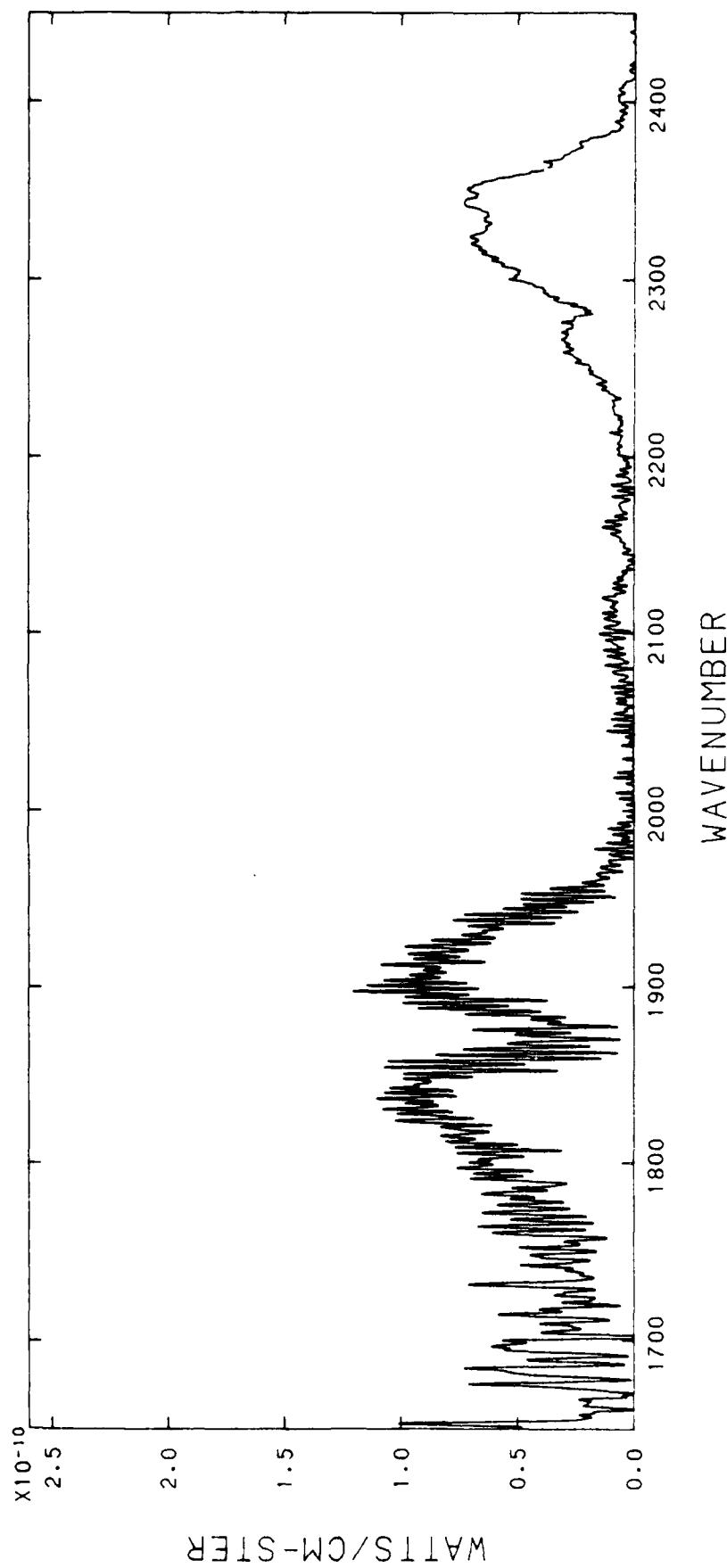
FILE 139, TIME 9:11:28.296, ALT 73.7- 71.9 KM

24-NOV-83 00:43





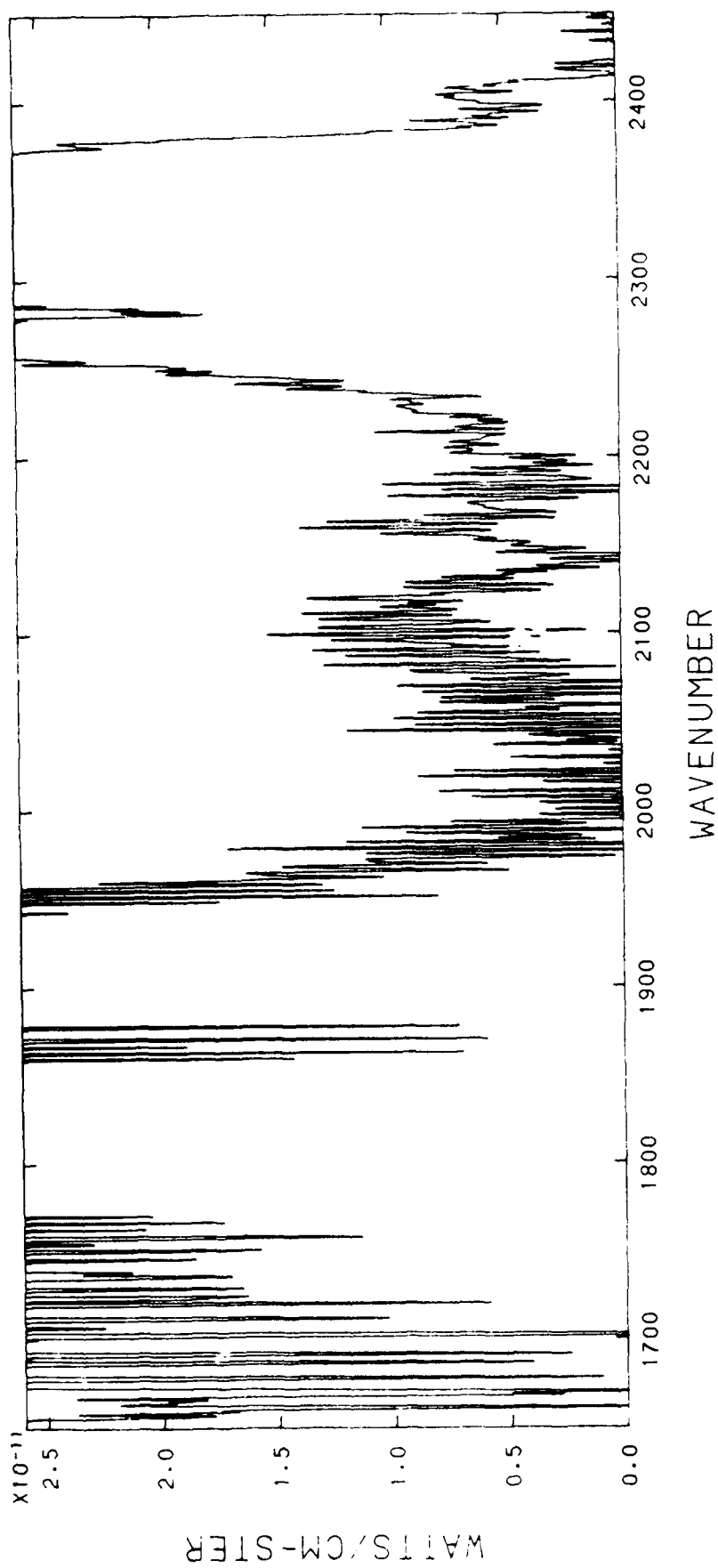
FILE 139, TIME 9:11:28.296, ALT 73.7- 71.9 KM



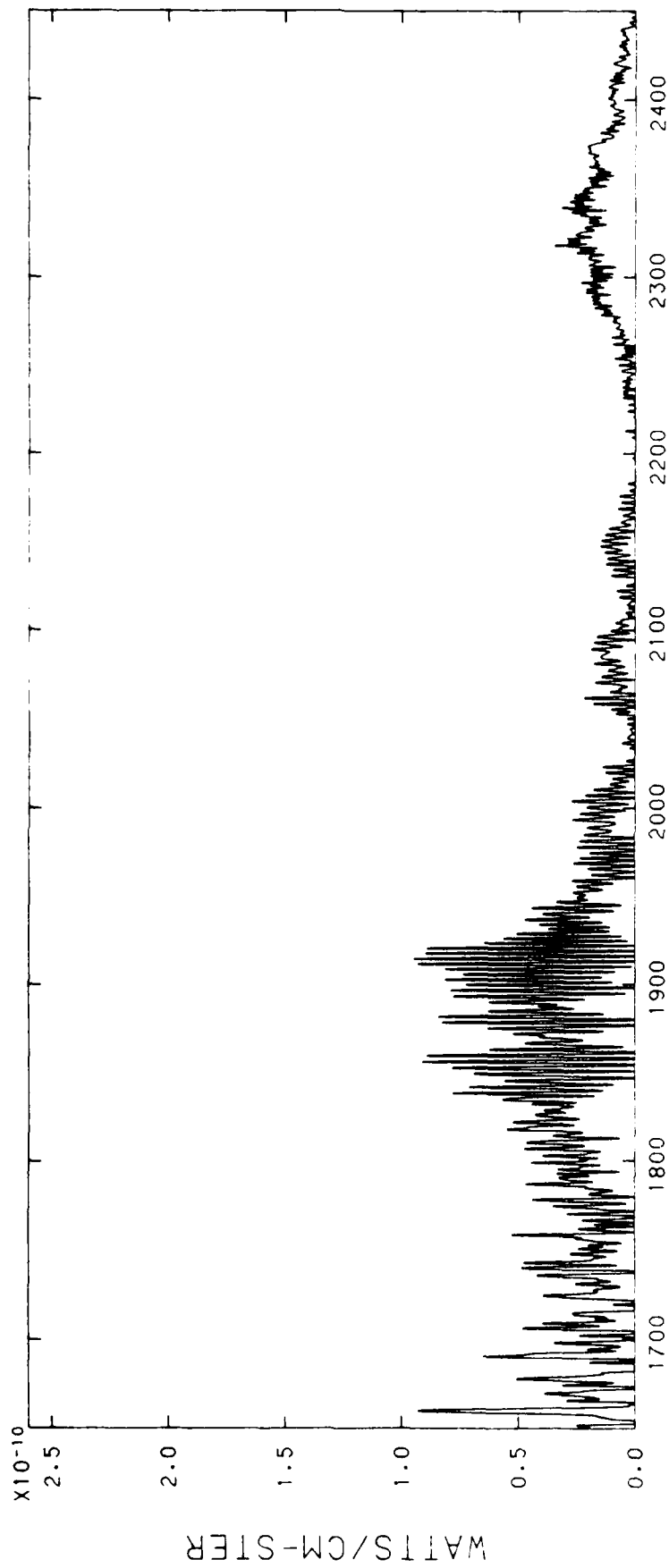
FILE 140, TIME 9:11:29.920, ALT 71.9- 70.0 KM

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24-NOV-83 00:43



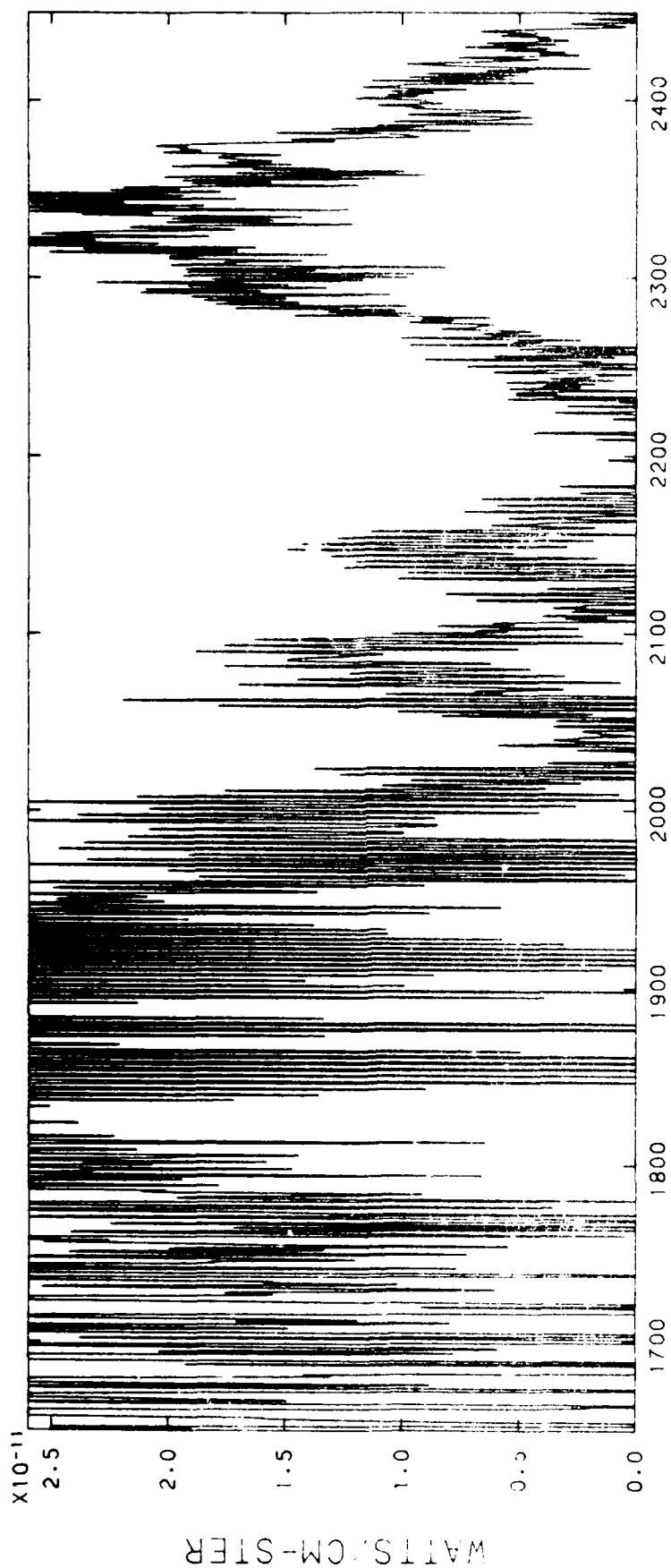
FILE 140, TIME 9:11:29.920, ALT 71.9- 70.0 KM



FILE 141, TIME 9:11:31.550, ALT 70.0- 68.2 KM

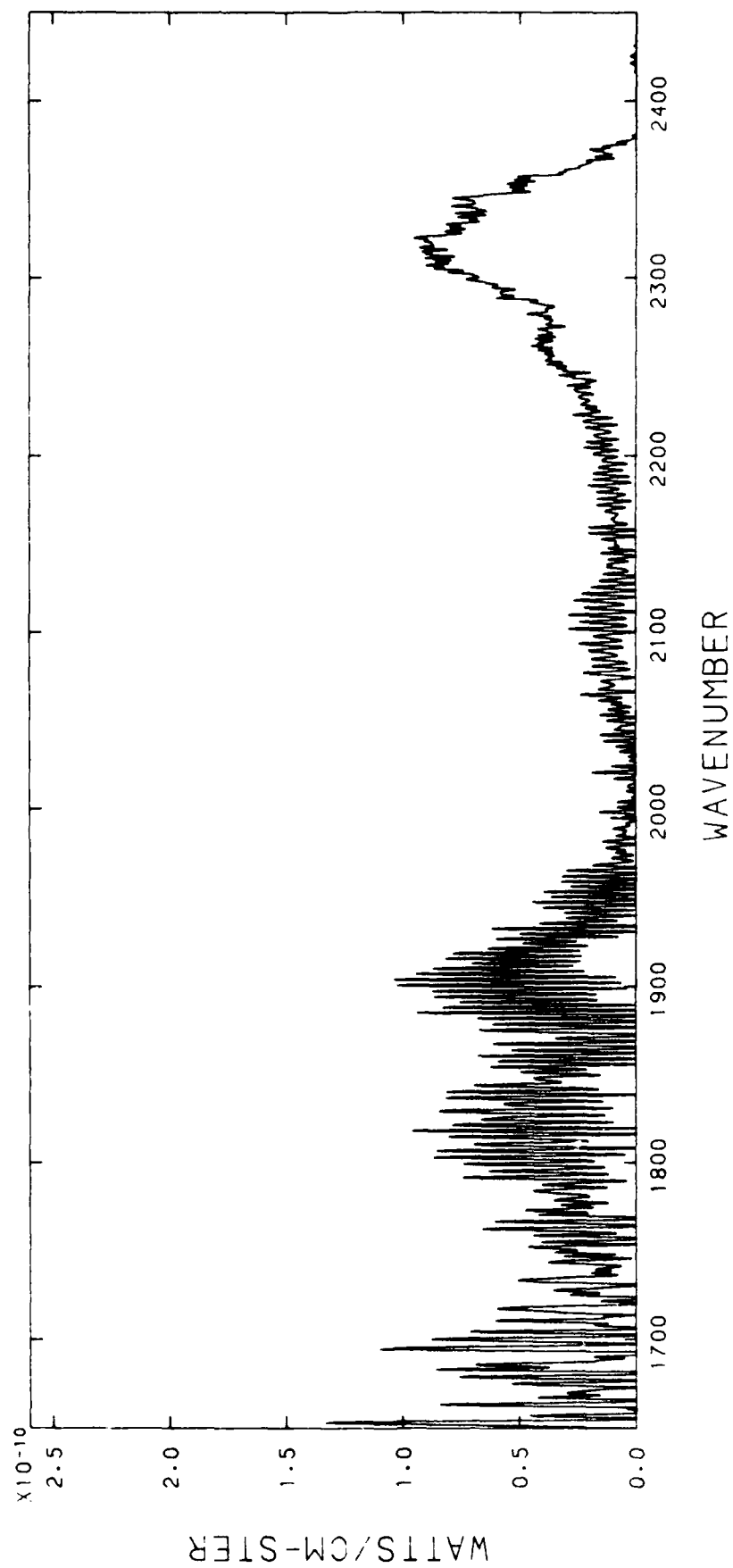
24-NOV-83 00:43

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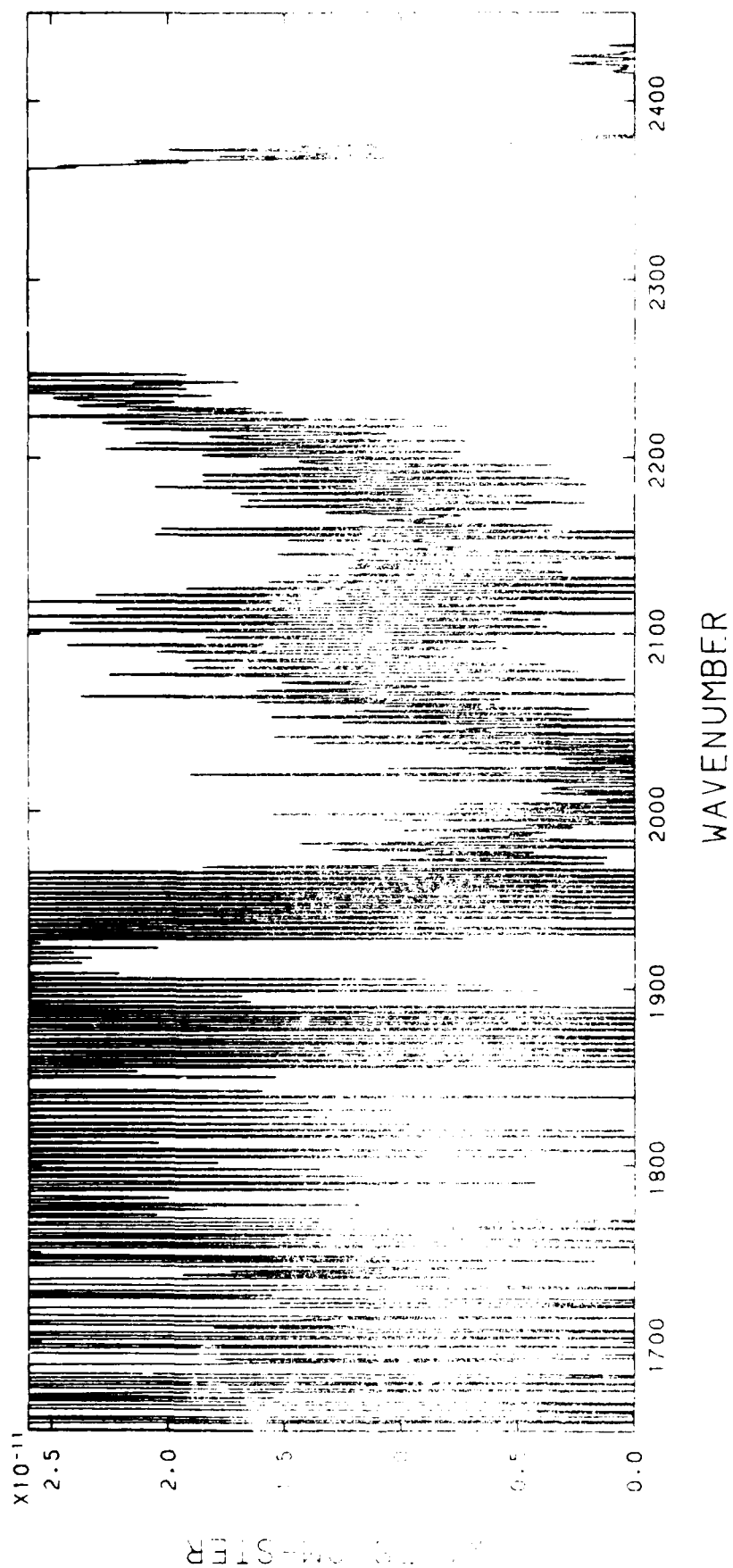
FILE 141, TIME 9:11:31.550, ALT 70.0- 68.2 KM

28 NOV-83 14:57



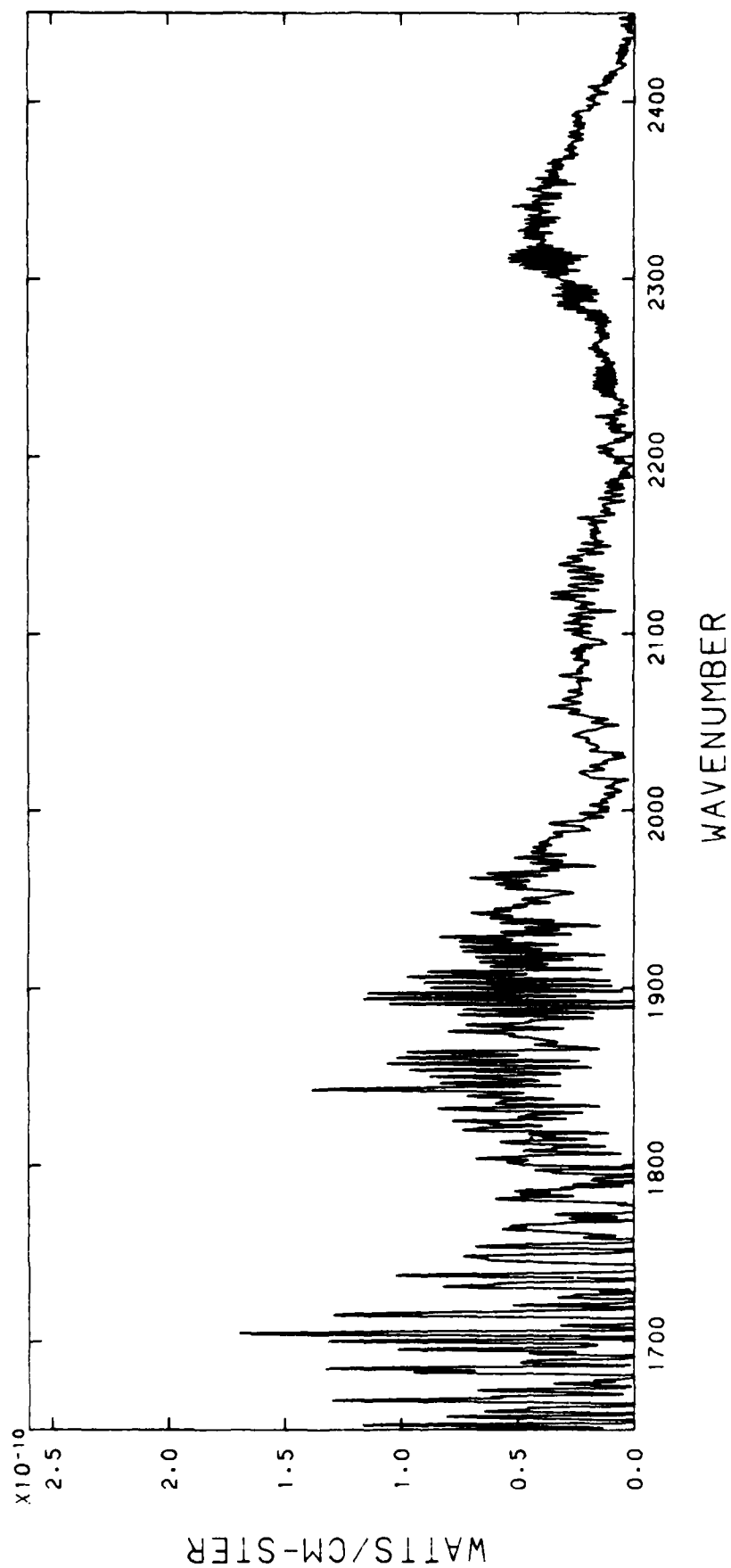
FILE 142, TIME 9:11:33.172, ALT 68.1- 66.2 KM

28-NOV-83 14:57



FILE 142, TIME 9:11:33.172, ALT 68.1- 66.2 KM

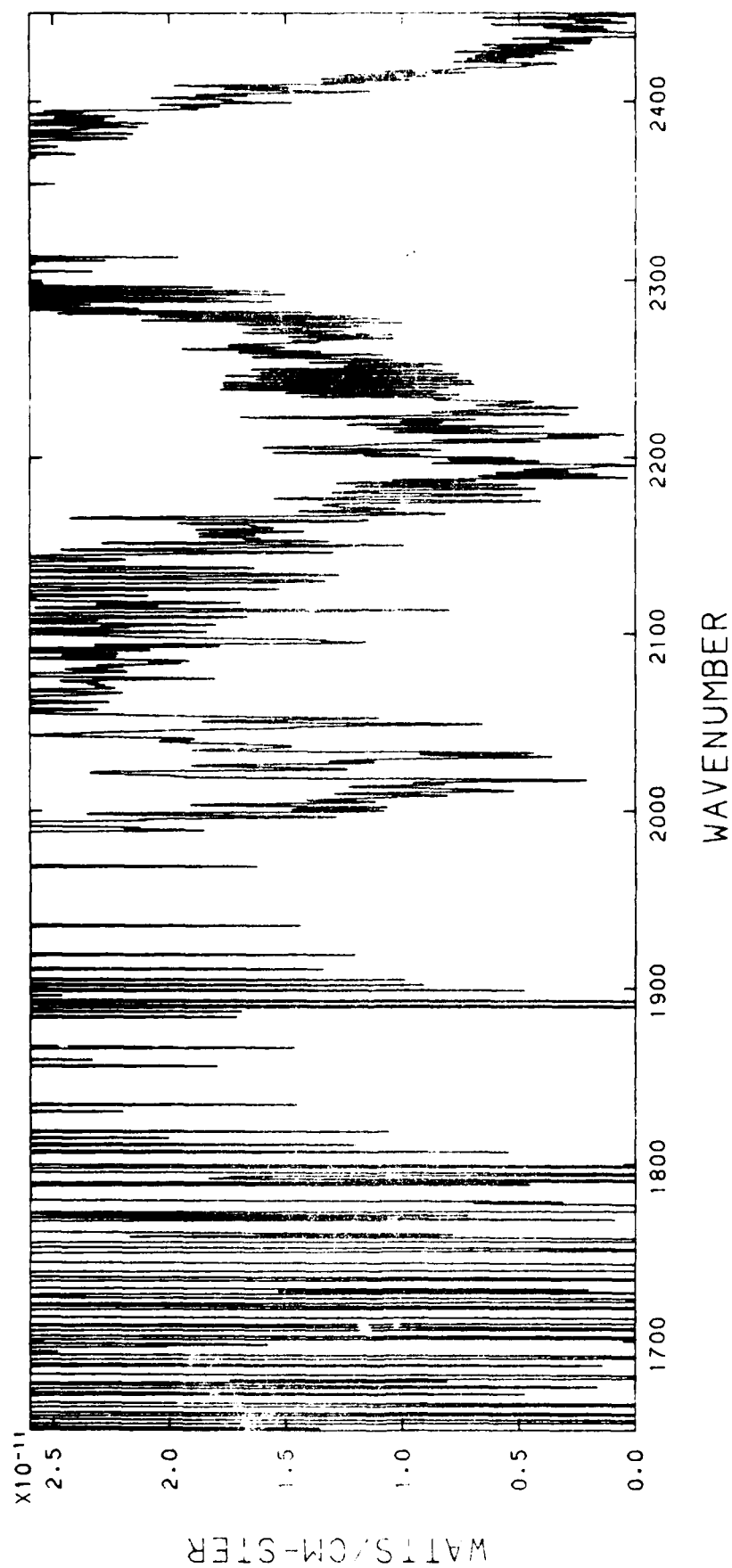
28-NOV-83 14:57



FILE 143, TIME 9:11:34.804, ALT 66.2- 64.3 KM

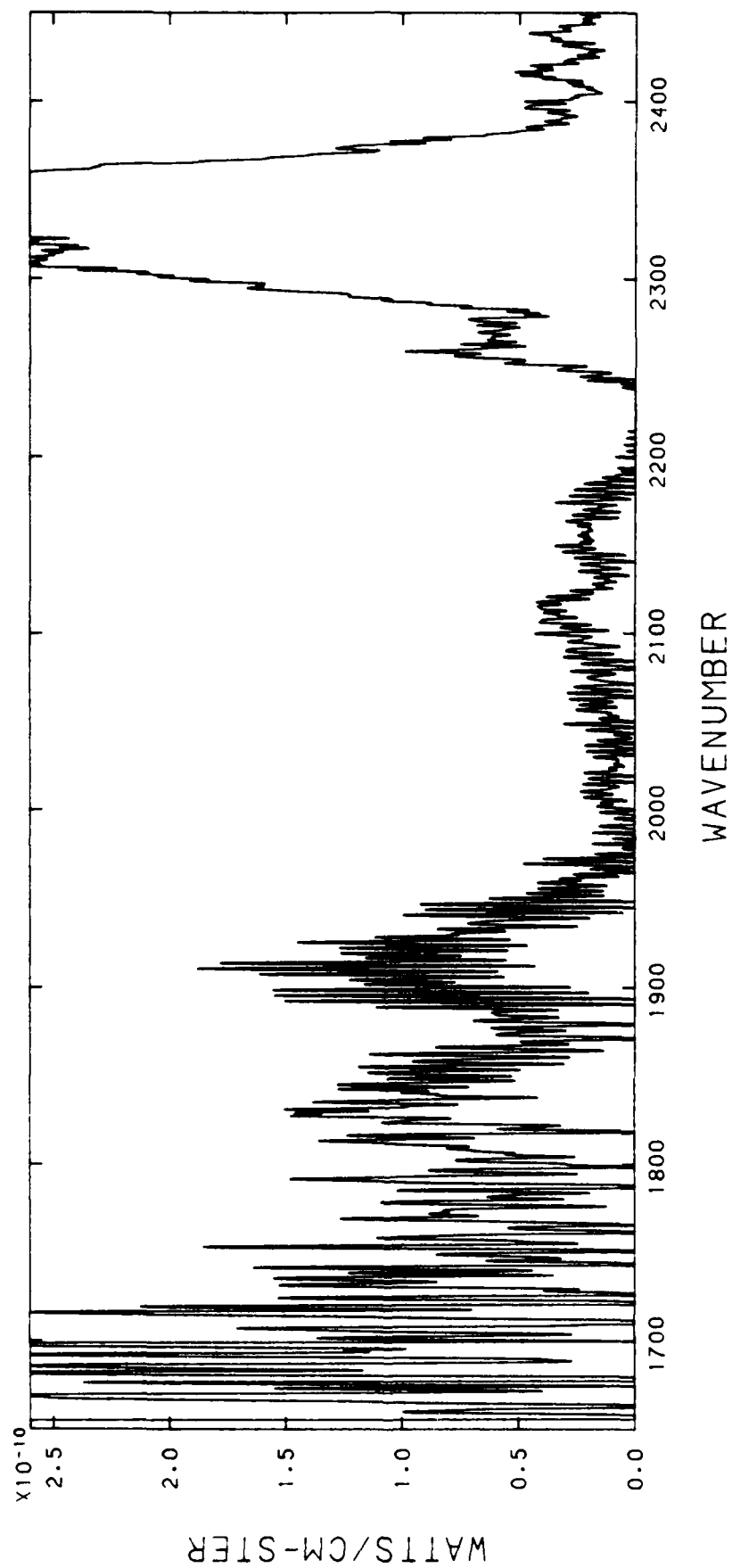
28-NOV-83 14:57





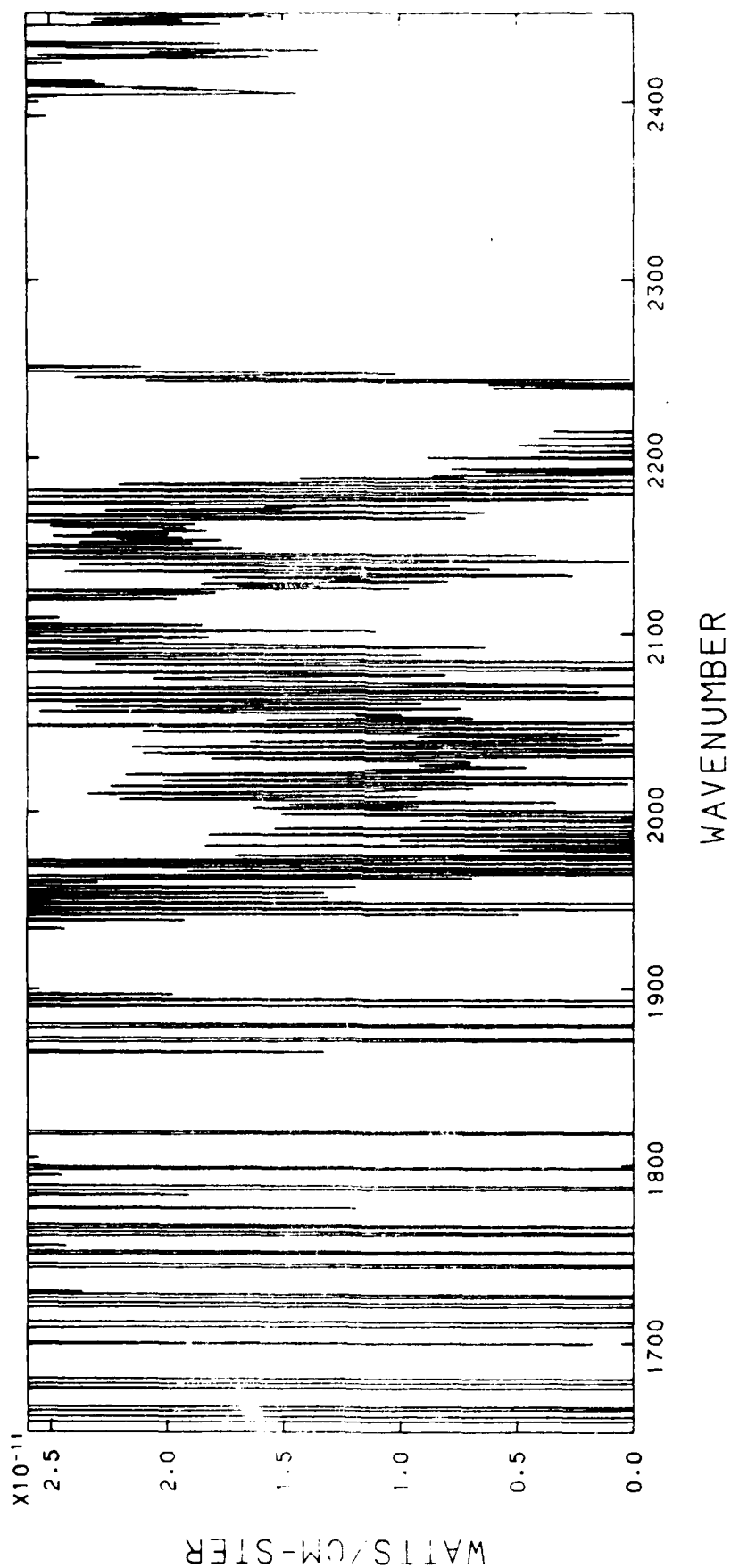
FILE 143, TIME 9:11:34.804, ALT 66.2- 64.3 KM

28-NOV-83 14:57



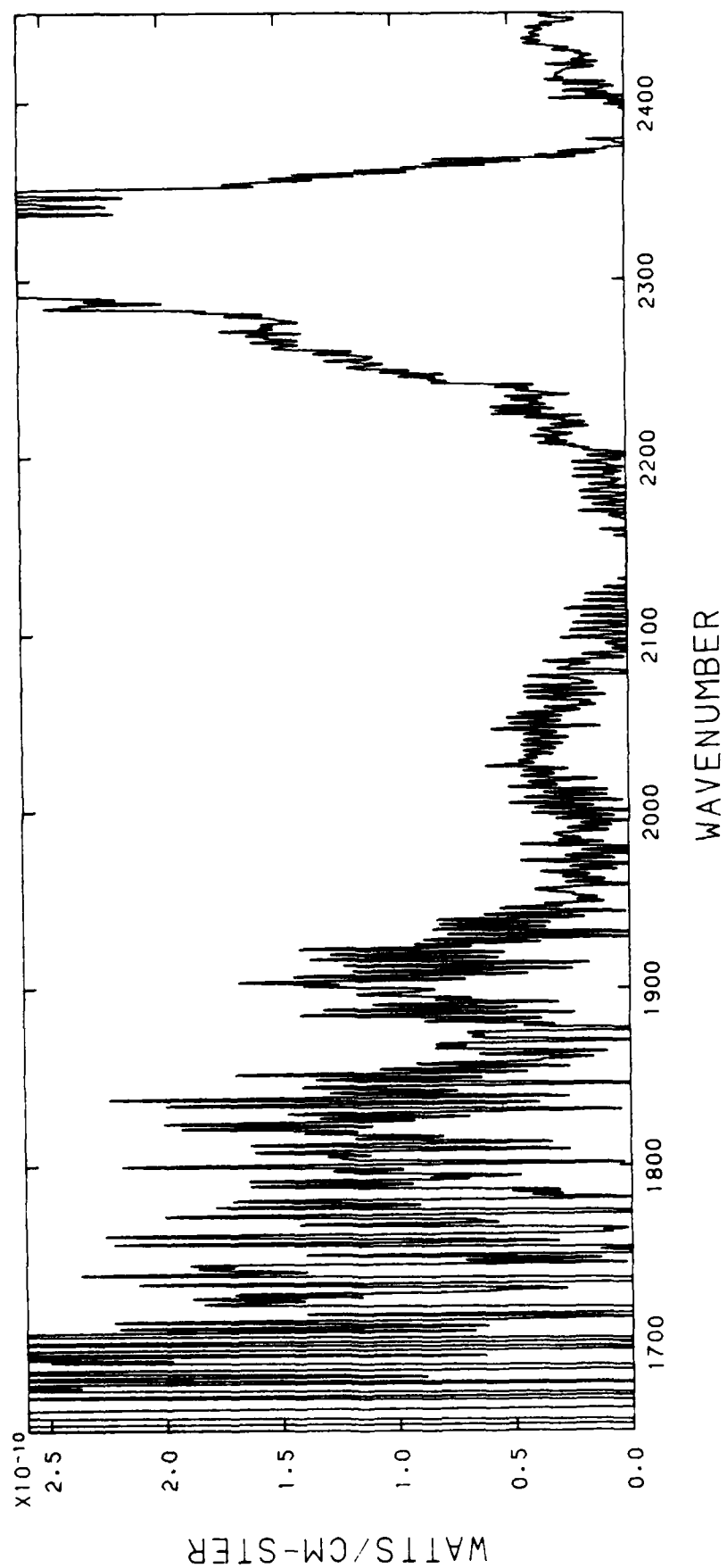
FILE 144, TIME 9:11:36.424, ALT 64.3- 62.4 KM

28-NOV-83 14:57



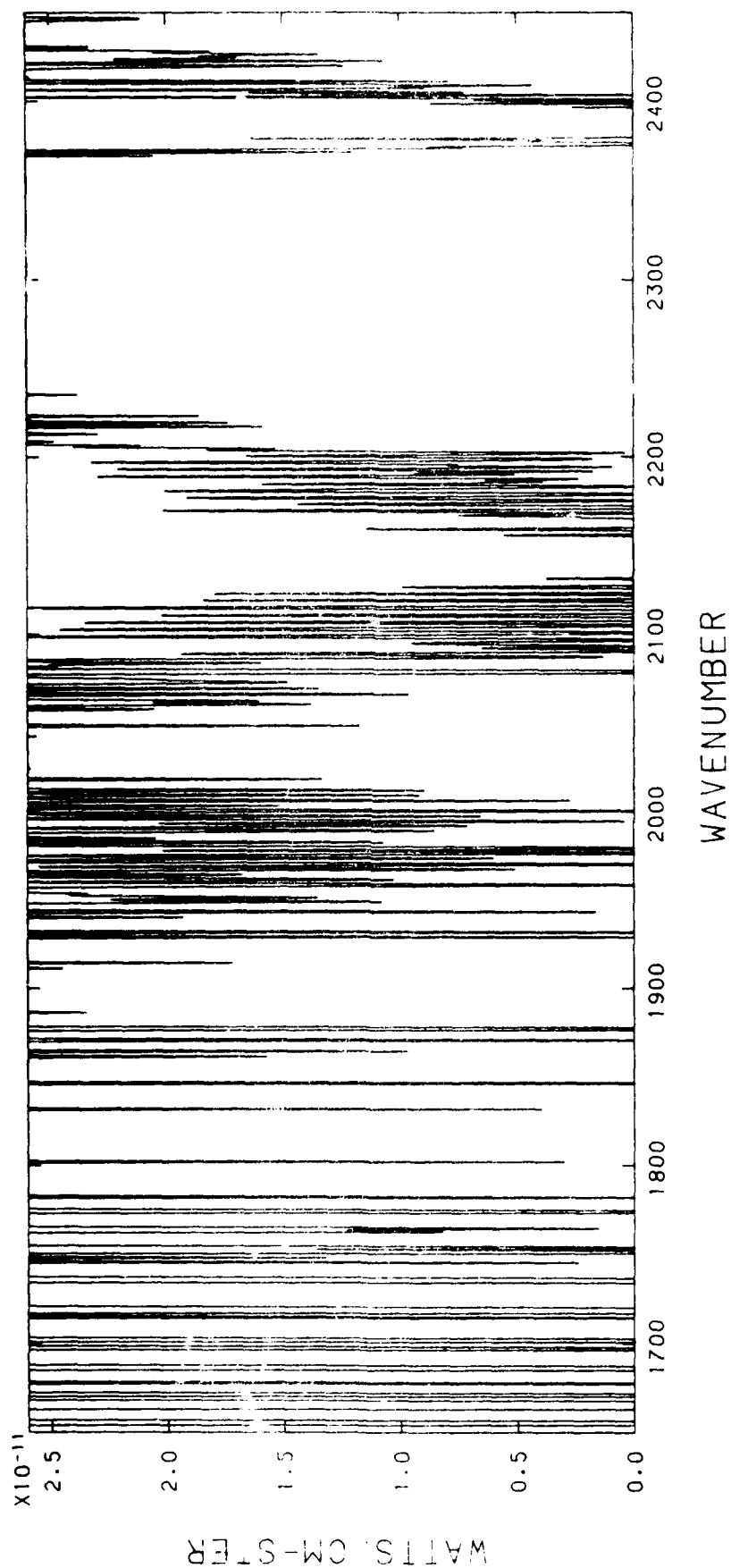
FILE 144, TIME 9:11:36.424, ALT 64.3- 62.4 KM

28-NOV-83 14:57



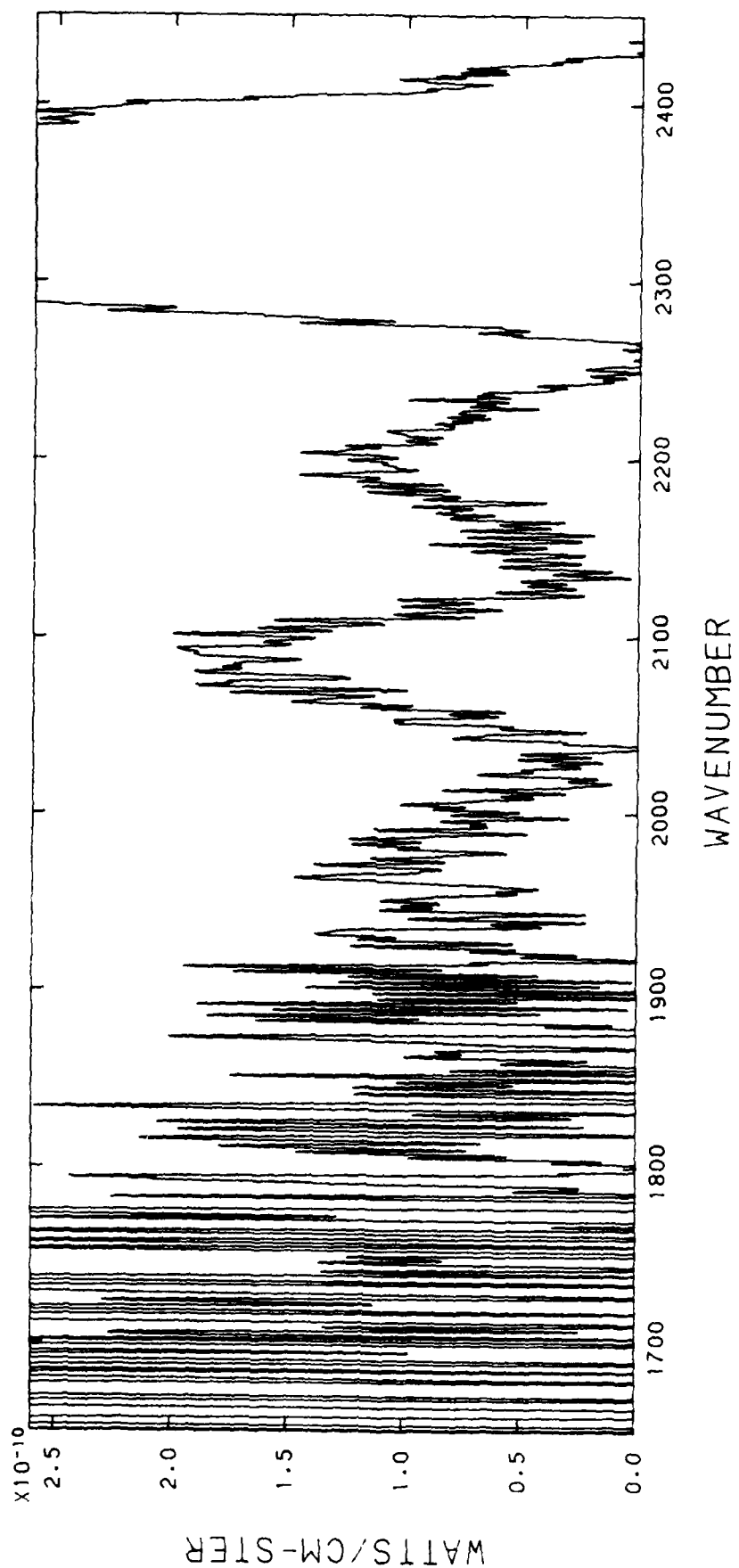
FILE 145, TIME 9:11:38. 68, ALT 62.4- 60.4 KM

28-NOV-83 14:57



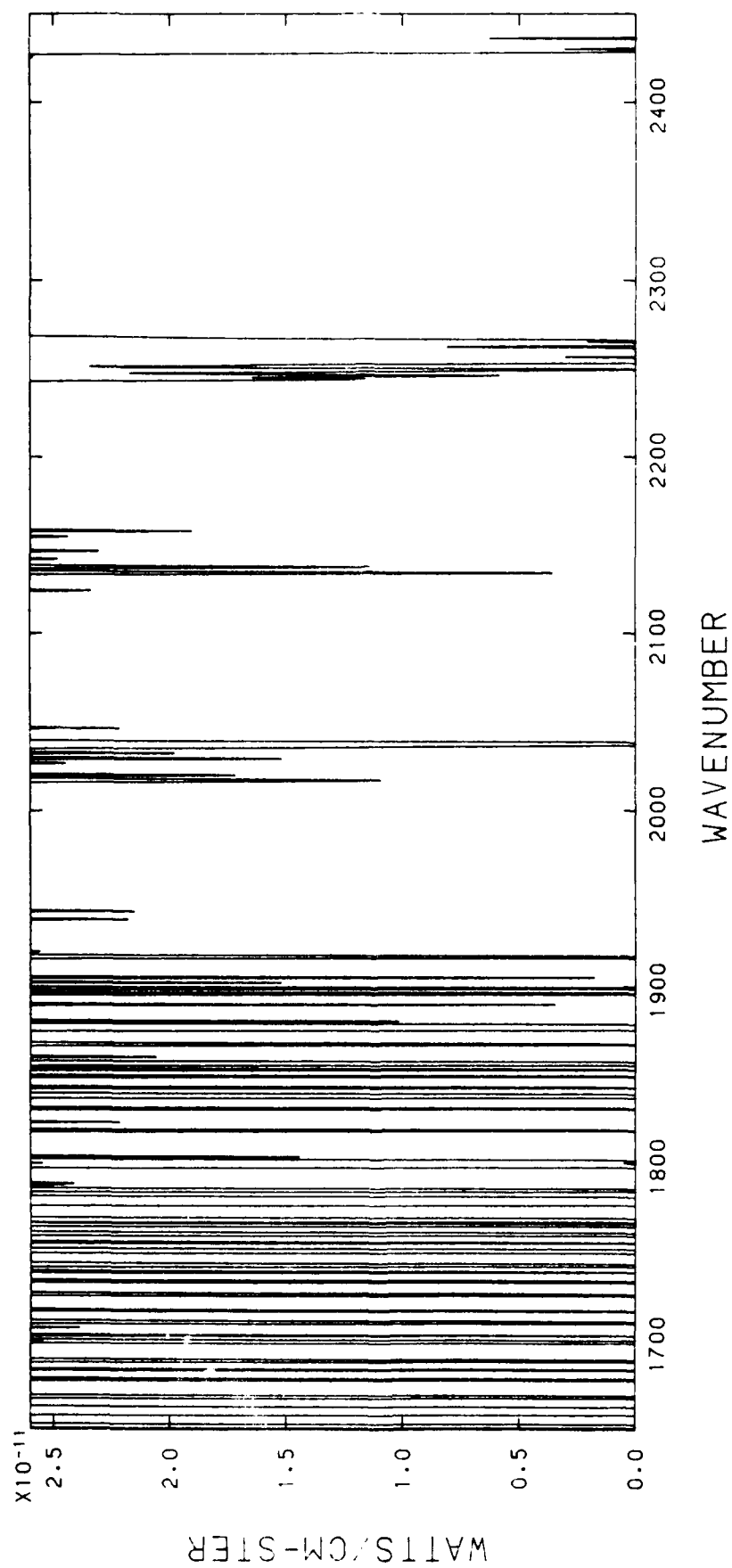
FILE 145, TIME 9:11:38. 68, ALT 62.4- 60.4 KM

28-NOV-83 14:57



FILE 146, TIME 9:11:39.690, ALT 60.4- 58.4 KM

28-NOV-83 14:57



FILE 146, TIME 9:11:39.690, ALT 60.4- 58.4 KM

28-NOV-83 14:58

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